1989

Family Characteristics, Subjective Daily Experience and Academic Performance in Early Adolescence

Carla M. Leone
Loyola University Chicago

FAMILY CHARACTERISTICS, SUBJECTIVE DAILY EXPERIENCE AND ACADEMIC PERFORMANCE IN EARLY ADOLESCENCE

by

Carla M. Leone

A Dissertation Submitted to the Faculty of the Graduate School of Loyola University of Chicago in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

August

1989

ACKNOWLEDGEMENTS

Completing this dissertation represents the fulfillment of a very special and important goal for me. The people who helped me do so are therefore special and important to me as well; their contributions are permanently reflected in the final manuscript, in my personal and professional identity, and in my memory.

Most of all, I would like to thank Dr. Joseph Durlak, the chairperson of my dissertation committee, my academic advisor, professional mentor, and friend. His commitment to community psychology and to the scientist-practitioner model of clinical psychology, as well as his talent for teaching, have had a major impact on my development as a psychologist. As dissertation chair, he provided valuable scholarly guidance in all aspects of the project, from the big picture to the minutia, along with liberal amounts of energy, patience, humor, and confidence in me, all of which I greatly appreciate.

I would also like to thank committee members Dr. Reed Larson and Dr. Maryse Richards, for access to their rich and fascinating data set and for their considerable help in making sense of it. I am especially grateful to Dr. Larson for his creative conceptual and statistical guidance and for his very generous commitment of time,

energy, patience and emotional support, which extended far beyond the call of committee-member duties. I also especially thank Dr. Richards for her helpful scholarly comments, for providing me with an impressive female psychologist role model, and for her inspiring energy and enthusiasm. In addition, thanks are extended to the schools and students who participated in the project, to Dr. Bernard Dugoni for statistical consultation, and to the other members of the Young Adolescent Study (YAS) research team for their contributions both to the overall project and to my mental health.

Finally, I greatly appreciate the support and patience of my family and friends, especially dissertation-mate Shelly Tucker, who shared the dissertation journey with me from start to finish. Last but far from least, special thanks to Denise Lensky for the friendship and laughter that helped get me through all five years of graduate school, up to and including this final step.

VITA

The author, Carla Marie Leone, is the daughter of Ms. Carla Connell and Mr. Richard R. Leone. She was born on July 9, 1960, in Weymouth, Massachusetts.

Ms. Leone's elementary and secondary education was obtained in the public schools of Weymouth, Massachusetts; she graduated from Weymouth North High School in June, 1978. Her first two years of undergraduate education were completed at Shenandoah Conservatory of Music in Winchester, Virginia, where she majored in Music Therapy. Her remaining undergraduate work was completed at Lesley College in Cambridge, Massachusetts, where she earned the Bachelor of Science degree in Education in May, 1982.

Prior to graduate school, Ms. Leone was employed for two years as a high school special education teacher. In August of 1984 she entered the doctoral program in clinical psychology at Loyola University of Chicago, where she earned the Master of Arts degree in Psychology in May, 1987. She was granted a Schmitt Dissertation Fellowship for the following year, enabling her to complete the dissertation in September of 1988. After completing a clinical internship during 1988-89, she earned the doctorate degree in August of 1989.

TABLE OF CONTENTS

LIST OF TABLES

CONTENTS FOR APPENDICES

CHAPTER I

INTRODUCTION

Children's academic performance (especially performance relative to their ability) can be conceptualized as one measure of their overall adaptive functioning. In addition to measuring knowledge or skill levels, school performance is also a measure of behavior that reflects children's development toward productive adult lives in society. Therefore, an understanding of the factors that influence children's academic performance has implications for understanding their overall development.

In addition, academic performance is currently of particular concern in the United States. Recent studies indicate that academic underachievement is a widespread problem in the U.S. (e.g., National Commission on Excellence in Education, 1983), leading to questions about the nation's eventual ability to compete with other industrialized nations. Thus, an understanding of the influences on academic achievement is also needed for the development of effective intervention and prevention programs for underachieving students.

Variables related to the home and family are widely acknowledged to be the primary influence on academic achievement after intellectual ability

(Coleman, 1966; Parkerson, Lomax, Schiller & Wahlberg, 1984). However, despite several decades of research on the relationship between the home and school performance, the specific nature of this relationship remains un-clear, leaving appropriate interventions for underachieving students unclear as well.

Research in this area has recently begun to move beyond the study of family "status" variables (Bronfenbrenner, 1986), such as family socioeconomic status or parental marital status, to identifying specific aspects of family interaction or "process" that may influence achievement more directly. While recent studies of family process variables are promising (Fotheringham & Creal, 1980; Hess, Holloway, Dickson, & Price, 1984), a number of questions remain regarding the potential influence of various aspects of family interaction on children's performance.

First, many studies have focused only on aspects of family process that are overtly relevant to achievement, such as the "educational environment of the home" (Fotheringham & Creal, 1980), parental school-related attitudes and expectations (Eccles, 1983), "achievement press" (Marjoribanks, 1979a), etc., most of which are based on cognitive or cognitive-behavioral theories of development. In contrast, less is known about the potential influence of the aspects of family interaction

emphasized by psychodynamic theories (Kohut, 1977; Winnicott, 1965), such as the affective quality of family relationships.

Moreover, the few studies of the latter variables have typically focused specifically on the parent-child relationship. However, interpersonally-based psychodynamic theories predict that other significant relationships also influence children as they grow older (Kohut, 1980). Therefore, the affective quality of relationships in the family as a whole would also be expected to influence children's development and thus their academic performance; however, this prediction has rarely been empirically investigated.

Second, while previous literature has documented a relationship between family process variables and academic performance, the specific mechanisms through which this link operates remain unclear. Specifically, how do family relationships affect children so as to then affect their grades or achievement test scores? In a recent review of the literature, Emery (1982) concluded that little evidence exists regarding this question and called for additional investigation in this area.

Recent developments in psychodynamic theory (e.g., Kohut, 1977) appear to hold promise for better understanding the link between family relationships and children's behavior. Interpersonally-based theories

hold that interpersonal relationships influence people's inner subjective experience of themselves, others, and the world. In terms of school performance, it can be speculated that children's affective experience may influence their ability to pay attention and concentrate on learning in the classroom, and thus influences their grades. Again, however, evidence to support this view is not currently available.

Lastly, a major difficulty with much previous literature on the relationship between the family and children's school performance is that many studies have failed to control for the influence of ability on academic performance (Phillips, 1984). This is problematic because intellectual ability (IQ) has consistently been found to account for over half of the variance in students' test scores or grades, and family variables have consistently be shown to be related to intellectual ability (Parkerson, et al., 1984). Thus, if a relationship is found between a family variable and students' grades, it is unclear whether the family variable is actually related to students' intellectual ability, or whether it exerts an additional influence on performance aside from ability.

The present study was designed to address these three issues raised by previous literature. Based on current psychodynamic theory (Kohut, 1977; Winnicott,

1965), the relationships between children's family relationships, their inner subjective experience (including mood, motivation and attention), and their academic performance were examined, after controlling for the effects of intellectual ability. In addition, the study investigated the view that process variables (such as family relationships and children's affective experience) are more important predictors of achievement than family status variables (such as socioeconomic status and parental marital status).

To do so, the study utilized an innovative method of assessing inner experience, the Experience Sampling Method (Larson & Csikszentmihalyi, 1983). This method involves having subjects carry electronic pagers and complete brief questionnaires about their subjective state (including mood, attention, and motivation) when signaled at various times in their daily lives. Thus, the method allows an immediate assessment of students' experience in the moment as opposed to in retrospect or in a laboratory setting.

In addition, the study examined family relationships, subjective experience and academic performance at a particularly important stage of human development: the transition from childhood to adolescence. This period is of particular concern in the study of underachievement, since school difficulties have been found

to increase significantly during early adolescence (Galloway, Ball, Bloomfield & Syed, 1982; Safer, 1986). In addition, relationships with family members are thought to change considerably during this period, as children begin the process of separating from the family and forming stronger relationships with peers (Blos, 1961). Thus, the potential relationship between the quality of family relationships and academic performance during appears particularly relevant during this age period.

Based on the above-described tenets of recent psychodynamic theory, the present study predicted that the quality of family relationships would be related to young adolescents' subjective experience, and that both variables would be related to the adolescents' academic performance, after controlling for the effects of their ability. In addition, the quality of family relationships was expected to be a more important predictor of academic performance than parental education or marital status.

In sum, the present study was designed to extend previous literature on the relationship between family process and children's academic performance. A clearer understanding of how the home influences children's academic performance has implications for understanding of development in general, as well as for the

development of more effective intervention and prevention programs for underachieving students.

CHAPTER II

REVIEW OF THE LITERATURE

Before the specific hypotheses of the present study are detailed, previous research on the relationship between family characteristics and children's academic performance will be reviewed. Issues relevant to the study of academic achievement will first be discussed, followed by a discussion of the definition and diagnosis of underachievement in particular. Previous studies of family status variables will then be described, along with findings regarding behavioral or cognitive-behavioral family "process" variables. The contrasting tenets of interpersonally-based psychodynamic theory will be outlined, and previous studies of family relationships, children's affective experience, and academic performance will be discussed.

Academic Achievement

Numerous potential influences on children's academic achievement have been proposed and studied, but an overall model that successfully predicts achievement has yet to emerge. However, a recent meta-analysis of over 250 studies of achievement (Parkerson, et al., 1984) indicated that the eight most important predictors of achievement are ability, motivation, quantity and

quality of instruction, peer group, home environment, classroom environment and media, in that order.

Parkerson and her colleagues (1984) tested several causal models of interrelationships among these variables, and concluded that ability, motivation, and quality of instruction are the primary predictors of achievement, accounting for 72%, 12%, and 6% of the overall variance, respectively. The home environment was found to affect achievement indirectly, through its influence on both intellectual ability and motivation.

The notion that the family thus influences children's performance in two different ways - by affecting their intellectual ability and by affecting their motivation - is of particular significance for the present study. Intellectual ability is conceptualized as a fairly stable trait related to learning capability or efficiency in a number of different areas. It is generally considered to develop primarily in the first few years of life, presumably through some combination of genetic factors and early environmental factors (Fotheringham & Creal, 1980). In contrast, motivational variables are considered to be less stable, environmentally-influenced factors related to the individual's effort on academic tasks.

As ability is thus considered to be already established in school-age children and adolescents,

interventions designed to increase or improve the academic performance of these students must necessarily focus on factors other than intellectual ability. Thus, while studies of the family influences on IQ may have implications for interventions targeting very young children, other studies must identify family variables that influence achievement above and beyond the influence of ability.

However, many studies of the relationship between family variables and academic performance have neglected to distinguish between ability and achievement. Most have simply demonstrated a relationship between a family variable and children's grades or test scores, leaving it unclear whether the family variable was actually related to children's ability or whether the relationship exists independent of children's ability.

To demonstrate the latter relationships, studies must include controls for the influence of ability on performance, either by matching subjects by ability, or by statistically removing or "partialling out" variance due to the effects of ability. Recent studies using multivariate analyses have controlled for ability by entering it first in a step-wise multiple regression, followed by the predictor variables of interest (e.g., Hess, et al., 1984; Jordan, 1984).

Ability is typically assessed with measures of

intellectual ability (IQ) or aptitude. However, in a more general sense, ability can be conceptualized as including other variables related to children's capacity to learn currently presented academic material. For example, the presence of a learning disability and/or previously-developed specific skill deficits in academic areas also influence children's performance, but are not typically reflected in measures of IQ. Therefore, measures of children's previous achievement (which presumably also reflect the influence of intellectual ability) can also be utilized as a method of controlling for ability (Wood, 1984).

While the assessment of academic achievement in relation to ability has only recently been applied to studying the academic performance of entire normative samples of students, it has long been used by clinicians and educators to identify "underachieving" students. Literature relevant to the study of underachievement in particular will therefore be briefly presented.

Academic Underachievement

Students who are not performing academically at a level consistent with their measured intellectual ability have been termed underachievers. Approximately twenty-five percent of school children are estimated to be underachieving (Weiner, 1979). In addition, over 10%

of adolescents in the United States fail to complete high school (National Commission on Excellence in Education, 1983), although at least half of these students are estimated to possess at least average intelligence (Havigurst, Graham, & Eberly, 1972).

It is important to note that underachievement is considered to be distinct from low achievement. Specifically, low achievement can be due exclusively to low intellectual ability, while underachievement can not. As underachievement is a measure of academic performance with intellectual ability taken into account, it is by definition due to an influence other than low intellectual ability.

Underachievement is typically diagnosed based on the difference between the achievement level predicted by intelligence tests and the child's actual performance on achievement tests (Thorndike, 1963; Yule, Lansdown & Urbanowitz, 1982). However, as noted above, it can also be diagnosed based on the discrepancy between the grades predicted by the child's achievement test scores and his or her actual grades (Neeper & Lahey, 1983).

In either system, a regression equation is computed based on the overall relationship between the independent and dependent achievement measures for a large population (Thorndike, 1963). This equation is then used to compute expected individual scores on the

dependent measure, which are then compared to the child's actual scores. Due to the potential for measurement error inherent in using discrepancy scores, a number of authors have emphasized the need to consider only relatively large discrepancies as indicative of underachievement. Accordingly, a child performing more than one standard deviation below the level predicted is generally considered to be underachieving.

Students diagnosed as underachieving using this method have been found to differ significantly from low achieving students (diagnosed regardless of ability) on a number of measures (Yule, 1973). In addition, the latter study also reported that discrepancies between ability and performance have been found to be reliable over time.

Family Status and Academic Performance

Song (1982, as cited in Song & Hattie, 1984) has conceptualized the home environment as consisting of three components: family structure (or composition), family status (socioeconomic variables), and family psychological characteristics. Bronfenbrenner (1986) has referred to both of the former variables as "social address" variables, as contrasted with family "process" variables such as psychological, cultural or social factors.

Earlier literature on the relationship between the family and academic performance focused primarily on the former aspects of the family, such as socioeconomic status (SES) and family composition (father absence, parental divorce). Socioeconomic status, in particular, has been described as the most commonly investigated family characteristic (Fotheringham and Creal, 1980).

Socioeconomic status has long been found to be related to both achievement and intellectual ability (Fotheringham & Creal, 1980; Trotman, 1977; White, 1982). In a recent review of the literature, Fotheringham & Creal concluded that the degree of this association varied from .35 to .5, depending on the measures used. However, it is unclear how well SES predicts academic performance after the effects of ability on performance are controlled.

Parental marital status has also generally been found to be related to children's academic performance, although some conflicting findings exist (e.g., Nye, 1957). Parental divorce has been found to be related to children's intellectual ability (Hetherington, Cox, & Cox, 1979b), school "work effectiveness" (Hess & Camara, 1979) and academic achievement (Crescimbeni, 1965; Kinard & Reinherz, 1986; Wallerstein & Kelley, 1976), even when socioeconomic status is controlled. The Wallerstein and Kelly (1976) study examined changes in

academic performance over the year post-divorce, thus providing a control for ability, a procedure rarely utilized in the remaining literature in the area.

Interestingly, research has rarely examined the effects of remarriage on children's achievement. Burchinal (1964) found no differences in the grade point averages of adolescents from intact vs. reconstituted families, while other studies have suggested that remarriage tends to attenuate some of the negative effects of father absence on cognitive functioning (Chapman, 1977; Santrock, 1972; Santrock, Warshak, Lindberg, & Meadows, 1982). However, no other evidence appears to be available.

Thus, overall it is clear that children from lower income homes and children from divorced homes are at risk for underachieving in school, as well as for other difficulties. This is especially alarming in light of the fact that these groups involve a large and increasing number of children. An estimated 12.5 million children were living in poverty-level homes in 1986 (U.S. Bureau of the Census, 1988). In addition, one to two percent of children under eighteen are estimated to experience parental divorce each year (U.S. Bureau of the Census, 1980), and it has been estimated that over the next few decades at least one third of all children will be directly affected by divorce (Glick, 1979).

However, before effective intervention and prevention programs can be developed for these children, further investigation is needed to identify to the family process variables that may accompany SES and divorce but influence children more directly.

Family Process and Academic Performance: Cognitive-Behavioral Variables

As noted earlier, many studies of family process variables have emerged from a cognitive or cognitive-behavioral view of human behavior. These studies can be divided into two types: those that focused on the "educational environment" of the home, and those that focused on parents' achievement-related perceptions, attitudes, or beliefs.

Educational environment variables include the opportunities for learning provided in the home, the educational atmosphere of the home, opportunities for development of communication skills (Fotheringham & Creal, 1980) and degree of verbal interaction (Hess, et al., 1984). These variables have consistently been found to contribute significantly to the prediction of achievement (Fotheringham & Creal, 1980; Majoribanks, 1979b;). They have also been found to account for as much or more variance in school performance than have socioeconomic status (Fotheringham & Creal, 1980; Hess,

et al., 1984).

Attitude-related variables include parents' perceptions of the value of education, their perception of their children's abilities, and their expectations for their children's performance. Eccles and her colleagues (e.g. Eccles, 1983) have demonstrated that these variables significantly predicted both children's own beliefs and the children's academic performance. Similar, though less specific findings have been reported by others (Crandall, 1969; Hess, et al., 1984; Marjoribanks, 1979b).

While this work represents an improvement over research that has investigated only family status variables, it is unlikely that educational stimulation and parental attitudes are the only aspects of family interaction that influence children's performance. In particular, interpersonally-based psychodynamic theories (Kohut, 1977; Winnicott, 1965) propose that the affective quality of family relationships exerts a pervasive influence on development. However, the potential influence of the latter aspect of the family on children's school performance has been investigated much less frequently.

Interpersonally-Based Psychodynamic Theories of Behavior

In their recent comparison of various

psychodynamic theories, Greenberg & Mitchell (1983) contend that these theories can be divided into drive-based theories such as those of Freud, Jung, and more recently, Kernberg, and interpersonally-based theories such as the work of Fairbairn, Winnicott, and Kohut. The latter theories propose that the structure of the personality is developed through relationships with other people, particularly the primary caretakers.

Interpersonally-based theories can then be further subdivided into two types, although this division is not particularly relevant for the present study. Object relations theorists such as Fairbairn and Winnicott predict that relationships with others lead to the development of mental representations of the self and of other people, which then affect feeling states and behavior. In contrast, self psychologists such as Kohut view relationships as influencing the development of the self, which is seen as responsible for affective regulation and thus behavior. In both cases, however, interpersonal relationships are seen as influencing the quality of inner affective experience, which then affects behavior.

While the early relationship with the primary caretaker is seen as the most important influence on development, a number of theorists (Erikson, 1975; Fairbairn, 1952; Kohut, 1977) have postulated that

relationships with significant others continue to foster further development throughout childhood, adolescence, and adulthood. It is suggested that people of all ages have a continuing need to feel safe, loved, and competent (Goldstein, Freud & Solnit, 1973). Adolescence, in particular, is thought to involve the development of increasingly complex, integrated, and abstract self and other representations (Guidano & Liotti, 1985; Wolf, Gedo, & Terman, 1972). As noted, these self and other perceptions are then thought to influence feelings and behavior.

Family Relationships and Academic Performance

Consistent with the basic tenets of interpersonally-based psychodynamic theory, several measures of interpersonal relationships have been found to influence children's functioning. These include parent-child relationships, interparental relationships, and family relationships in general. Previous studies in each area will be discussed in turn.

A recent longitudinal study (Estrada, Arsenio, Hess, & Holloway, 1987) found that the affective or emotional quality of the mother-child relationship at age four was significantly related to children's "mental ability" at age four, IQ at age 6, and achievement test scores at age twelve (r =.40). Notably, the

parent-child relationship was found to enter first in a multiple regression analysis predicting age twelve achievement, before other process variables such as maternal expectations, communication skill, and attributions for success (Hess, et al., 1984). Moreover, the relationship variable remained the primary predictor of achievement after a measure of age five "school readiness" was entered first to control for previous ability.

Similar relationships between the quality of the parent-child relationship and children's school performance have also been found in correlational (non-longitudinal) studies (Forehand, Long, Brody & Fauber, 1987). Several studies on the effects of divorce and conflict on children have found that good parent-child relationships are associated with fewer problems in children, including children from divorced, intact-conflictual and intact non-conflictual homes (Hess & Camara, 1979; Hetherington, Cox, & Cox, 1979b; Petersen & Zill, 1986; Rutter, 1971). In particular, Hess & Camara found that the quality of parent-child relationships significantly predicted children's work habits at school, although the effect of ability was not controlled.

Other studies have examined the potential effects of other aspects of the parent-child relationship on cognitive functioning. Children who are "securely attached" (Bowlby, 1977) as infants have been found to

demonstrate better social and problem-solving skills as preschoolers (Bretherton, 1985). In addition, studies of parental discipline styles have also demonstrated a relationship between discipline style and children's academic performance (Hess & McDevitt, 1984; Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987).

While the studies just described have assessed the relationship between the parent and child in particular, recent interpersonal theory (e.g., Kohut, 1977) proposes that other significant relationships should also influence development, especially among older children. Thus, parent-parent relationships and sibling relationships should also influence children's functioning.

Consistent with this view, interparental conflict has consistently been found to be related to children's adjustment (Emery, 1982). In a recent review of the literature on interparental conflict, Emery concluded that evidence from five different research approaches supports the conclusion that it is interparental conflict, not divorce or separation, that accounts for the relationship between divorce and childhood problems. He notes that several studies have found that children from conflictual, intact homes were more likely to have problems than were children from broken but conflict-free homes (Gibson, 1969; Nye, 1957; Petersen & Zill, 1986; Power, Ash, Schoenberg, & Sorey, 1974).

surprisingly, however, the one available study on interparental conflict and school performance (Hess & Camara, 1979) found that the relationship between interparental conflict and work habits at school (preparedness, concentration, attentiveness, tolerance of delay) did not attain significance.

Lastly, researchers have recently begun to assess the overall quality of relationships in the family as a whole. A multidimensional measure, the Family Environment Scale (Moos & Moos, 1981), has been developed for this purpose and has been found to differentiate between various types of families (Moos & Moos, 1976; Soresby & Christensen, 1976). Three of the measures' ten subscales, labeled Cohesion, Expressiveness, and Conflict, assess family relationships.

One study has specifically investigated the relationship between such overall family relationships and academic performance. Nelson (1984) recently reported that all three relationship subscales of the FES significantly predicted children's self-concept and satisfaction with school, and that the Conflict subscale was significantly negatively correlated with students' grades. Again, however, this study did not control for the influence of ability on grades, leaving the relationship between family relationships and grades unclear. Additional research is thus needed to further

investigate the potential influence of overall family relationships on children's academic performance.

Family Relationships and Children's Affective Experience

The studies described above have generally demonstrated a link between relationships and children's academic performance without addressing the question of how relationships influence children so as to then influence their performance. Emery (1982) has identified several possible mechanisms through which interparental conflict may affect children, which appear to be applicable to family relationships in general. He proposes that interparental conflict affects children by: 1) disrupting attachment bonds, instinctively leading to anxiety and distress (Bowlby, 1980); 2) providing maladaptive parental models for children (Bandura, 1973); 3) leading to disrupted parental discipline styles; and 4) functioning as a general "stressor" on children, thereby eliciting anxiety or distress.

The former view (Bowlby, 1980) is rooted in psychodynamic theory and is similar to the explanation investigated by the present study. Bowlby emphasizes a biological/evolutionary cause of anxiety, while other interpersonal theories (e.g., Winnicott, 1965, Kohut, 1977) propose that relationships influence children's feelings by affecting their inner representational world

or their sense of self. Both views propose that inadequate family relationships affect children's feelings, causing distress or anxiety, and thus affect their behavior.

In addition, while the remaining explanations offered by Emery (1982) do not directly concern the quality of parent-child relationships, a significant similarity can be noted among all but one of these explanations. Specifically, like relationship-based theories, all of the proposed explanations except for the one regarding modeling predict that some aspect of interparental conflict leads to anxiety and distress in children.

Little evidence regarding this prediction is available. Wallerstein and Kelly (1976) found that children and adolescents reported considerable negative emotion following parental divorce and another study found that the quality of family relationships was related to children's self-esteem (Nelson, 1984). However, no studies on overall family relationships and children's affect appear to be available. The absence of investigations of affective experience is likely due to the difficulty adequately measuring feeling states. The development of the Experience Sampling Method, utilized in the present study, allows assessment of previously unavailable information about inner affective

experience.

Affective Experience and Academic Performance

As noted, the final prediction of interpersonal theories of behavior is that inner affective experience then influences behavior or adaptive functioning; school performance is seen as one measure of behavior. Most previous research on the relationship between affect and students' school performance has focused on three general areas: interest in school or enjoyment of school, school-related anxiety, and depression.

Interest in and enjoyment of school has consistently been found to predict achievement (Bloom, 1976; Eccles, 1983; Richards, Gaver, & Golicz, 1984). However, this construct does not adequately capture the variety of emotional states that students can experience which may influence their performance. For example, it can be speculated that an individual could be interested in math or enjoy learning math, in general, but still experience feelings of depression or anger which could negatively influence his or her performance.

A fairly extensive literature has investigated the influence of anxiety on school performance, particularly performance in math or on tests in general (e.g., Sarason, 1972; Tobias, 1978). Although this literature is somewhat inconsistent (e.g. Felson, 1984), overall it

appears that anxiety is moderately related to achievement (Gaudry & Spielberger, 1971).

Finally, given the extensive literature on depression, it is surprising that so little research has investigated the relationship between academic performance and depression in children. A number of studies have shown a relationship between academic performance and cognitive styles typically associated with depression, such as learned helplessness (Butkovsky & Willows, 1980), and "explanatory style" (Nolen-Hoeksma, Girgus & Seligman, 1985), but only the latter study also reported a correlation between achievement and depressive symptoms (r =-.20).

Studies of information-processing have also suggested that positive moods facilitate learning (Hettena & Ballif, 1981; Izard, Nagler, Randall, & Fox, 1965; Izard, Wehmer, Livsey, & Jennings, 1965), while even low levels of negative affect have been found to impair performance on cognitive tasks (Kaslow, Rehm, & Siegel, 1984; Masters, Barden & Ford, 1979). Notably, Hettena and Ballif reported a correlation of r=.20 between mood and sentence recall, remarkably similar to the correlation between achievement and depressive symptoms, reported above.

Overall, these results consistently indicate that emotions or feelings are related to achievement.

However, their usefulness is limited by the fact that the studies have used one-time or dispositional measures of affect that assess only one main dimension of emotion, such as enjoyment, anxiety, or depression. In contrast, a relatively new method of assessing emotional states, the Experience Sampling Method (Larson & Csikszentmihalyi, 1983), allows for a more detailed, immediate and comprehensive assessment of subjective or affective state.

The Experience Sampling Method involves having subjects carry a pager for one week and complete self-reports when signaled at several random times per day. The self-reports completed at these times assess subjects' activity, companions, thoughts, and feelings. The latter items assess subjects' affect, activation, and motivation. A number of studies have been conducted using this method, and the measure has been found to have acceptable psychometric properties (Larson & Csikszentmihalyi, 1983).

Three previous studies (Larson, Csikszentmihalyi & Graef, 1980; Lorek, 1987; Mayers, 1976) have examined the relationship between moods and achievement using this method. The former study found that the variability of students' moods was significantly related to teachers' ratings of their intellectual involvement, but not to their grades. However, a study of the same data

set (Mayers, 1976) found that grades were significantly correlated with the degree to which students reported feeling involved, active and sociable in class and with the degree to which they reported that they wanted to be in the class.

In addition, using somewhat different self-report items, Lorek (1987) found that gifted adolescents from divorced families reported more negative feelings while engaged in productive activities (school or work) and more positive feelings when with friends than did students from intact families. Although the relationship between moods and performance was not directly examined, children of divorced families were also rated by their teachers as being lower achievers than were students from intact families.

Thus, initial studies of the relationship between achievement and mood states assessed using the Experience Sampling Method have revealed encouraging results. Further investigation appears to be indicated in order to more clearly establish the relationship between moods and achievement and to examine the relationship between family relationships and children's moods.

Attention in Class and Academic Performance

Finally, if moods in classes are related to students' academic performance, this again raises the

question of how moods affect children so as to affect their performance. Presumably, their inner affective experience influences their ability to learn optimally and/or to work to capacity, but how this occurs remains unclear.

Hess and Camara (1979) reported that children of divorced families had poorer "work effectiveness" than children from intact homes, as assessed from teacher ratings of children's preparedness, concentration, attentiveness, task completion, and tolerance of delay. Moreover, studies of information processing (Hettena & Ballif, 1981; Izard, Nagler, Randall, & Fox, 1965; Izard, Wehmer, Livsey, & Jennings, 1965) described above, suggest that mood influences the manner in which information is encoded and the ability to memorize and recall information.

Finally, a number of recent studies (Karweit, 1984; McIntyre, Copenhagen, Byrd & Norris, 1983) have demonstrated a relationship between the amount of time students are "on-task" (paying attention, participating, complying with demands, etc.) in the classroom and their academic performance. It can be speculated that children's affective experience is related to their attentiveness, which then affects their learning and academic performance. The present study therefore also investigated the relationship between family relationships,

children's attention in class, and their academic performance, using the Experience Sampling Method to assess subjects' attention to what they were doing when signaled.

The Present Study

The present study was designed to move beyond the previously-established link between family status variables and achievement, to identifying the variables that may mediate this relationship or influence achievement more directly. In addition, rather than focusing on a single mediating variable, the present study proposed a sequence of mediating variables that have not been carefully studied in the past.

Based on current interpersonally-based theories of behavior, the study investigated the prediction that family relationships influence children's moods and attention, and that these variables influence children's academic performance (after ability is controlled). In addition, the prediction that family relationships and children's affect and attention would be more predictive of academic performance than family "status" variables was also investigated.

Specific hypotheses were as follows:

1) The quality of family relationships was expected to be significantly related to childrens' subjective

affective experience.

2) The following variables were expected to be significantly related to subjects' academic achievement after controlling for the effect of ability: family status (parental education and marital status); family relationships; affective experience; and attention in class.

3) Family relationships and affective experience were expected to be more important predictors of academic achievement (after controlling for ability) than parental education and marital status.

CHAPTER III

METHOD

Subjects

Subjects were randomly selected from the entire public school student populations (N=approximately 2000) of fifth through ninth graders in two suburban communities. Selection was stratified by grade, sex and community and designed to yield a representative sample of slightly over 500 students, or approximately 25% of the student populations.

Selected students who did not participate (N=157) were replaced with additional randomly selected students from the same cell of the grade by sex by community stratification. Accordingly, to obtain a sample of 531 participants, a total of 688 students were selected, yielding a participation rate of 77%. Of the students who were selected but did not participate, 84 (12.2% of the 688 selected students) chose not to participate, 46 (7%) were not permitted to take part by parents, four (0.6%) were denied teacher's permission to participate, one (0.1%) was absent and therefore never invited, and 31 students (4.5%) declined without identifying a reason.

Of the 531 students who did participate, 39 students (5.7% of the selected students) were excluded from

final analyses due to incomplete or invalid data. The final sample for the present study thus consisted of 483 students, 70.2% of the randomly selected students.

Preliminary analyses indicated that there were no significant differences in participation rates by grade, sex, school or wave of participation. Students who declined to participate also did not differ from those who agreed in terms of parental occupation or self-esteem. However, students from "reconstituted" homes (parents remarried) had a significantly lower participation rate (57%) than did the overall sample (73%). In addition, subjects who were dropped from the final analyses were found to have lower grade point averages (t=7.46, $p<.001$) than students who completed the study's requirements adequately.

The final sample of 483 consisted of 102 students in grade five, 52 boys and 50 girls; 107 students in grade six, 53 boys and 54 girls; 104 students in grade seven, 51 boys and 53 girls; 97 students in grade eight, 49 boys and 48 girls; and 72 students in grade nine, 36 boys and 37 girls, for a total of 241 boys and 242 girls.

Subjects were drawn equally from two suburban communities: one an urbanized, working class, blue collar community (N=237) and the other an outlying, middle to upper-middle class, white collar community

(N=246), as identified from 1980 census data. They were from a total of six schools: two elementary schools and one high school in each community.

Preliminary analyses indicated that the mean education level of parents of subjects in the study was 13 years, or one year past high school. Only 9.6% of mothers and 12.1% of fathers had less than a high school education, while 17.6% of mothers and 23.5% of fathers had a college degree or beyond.

In addition, initial analyses indicated that 372 or 77.2% of the subjects' parents were married, while 6 or 1.2% of the parents were separated, 48 or 10% were divorced (time since divorce or separation: M = 8 years, SD= 3.4 years, range = 3 months to 10+ years), 28 or 5.8% were remarried, 9 or 1.9% were widowed, 2 or 0.2% had never been married, and 17 or 3.5% did not indicate their marital status. As the national norm indicates that one of five children is from a single parent family (U.S. Bureau of the Census, 1988), it appears that children from intact families were over-represented in the current sample.

Measures

Academic Grade Point Average (Academic GPA).

Academic performance was assessed using academic grade point averages computed from report card grades for the

current academic quarter and the previous three quarters. Grades from nonacademic classes such as music, art, vocational classes, and P.E. were not included in this grade point average. GPA was computed on a thirteen point scale, with 13 equal to a letter grade of A+ and 1 equal to a letter grade of F.

Each student's GPA was translated into an "Adjusted GPA" score, representing their GPA after controlling for the influence of ability and other variables. The specific method of computing this variable will be described in the following chapter.

Standardized Achievement Test Scores. Composite scores on standardized achievement tests were used as the measure of ability. Although a group-administered measure of IQ was also available as a measure of ability, achievement test scores were chosen as the measure of ability for several reasons.

First, achievement test scores presumably reflect the influence of IQ, as the two measures are highly correlated (r=.70 for the present sample). In addition, consistent with Wood's (1984) arguments against using the WISC-R to predict achievement, achievement tests scores were more highly correlated with grade point averages than were IQ scores (r=.69 and .51, respectively). Since achievement tests assess developed skills or previous learning, using achievement test

scores as the measure of ability can be seen as controlling for the influence of both developed skills and learning aptitude or IQ. Lastly, achievement test scores were also chosen because they were available on more students than were IQ scores.

Achievement tests had been administered by the schools within one year of the present study. Composite percentile scores on the Survey of Basic Skills (SBS) (Science Research Associates (SRA), 1985) were used for fifth through eighth graders, while the Comprehensive Test of Basic Skills (CTBS) (McGraw-Hill, 1983) was used for ninth graders. Both are nationally normed, widely used achievement tests. Norms for both tests were obtained during twice yearly national standardizations.

Parent Questionnaire. Parental education and family composition (intact, divorced, remarried, etc.) were assessed using parents' responses to a four page demographics questionnaire developed for the larger study. A copy of the questionnaire is included in Appendix A.

Family Environment Scale (FES). Scores on three of the ten subscales of the Family Environment Scale (Moos & Moos, 1981) - Cohesion, Expressiveness and Conflict -were used to assess family relationships. A copy of these three scales is included in Appendix A. (The remaining subscales assess educational

characteristics and organizational structure of the family and were not included in the present study.)

The three relationship subscales are designed to assess the extent to which the family fosters a sense of belonging and pride in the family, allows open expression, and engages in conflictual interactions, (Moos & Moos, 1976). Higher scores reflect endorsement of more items in each scale, such that high conflict scores indicate a more conflictual family than low conflict scores.

Previous studies have demonstrated that the measure possesses adequate psychometric properties. Adequate internal consistency ($\underline{r}$ = .64 to .79) and test-retest reliability ($\underline{r}$ = .68 to .86) of the subscales has been demonstrated (Moos & Moos, 1981). In addition, the FES has been found to discriminate between clinic and control group families and between alcoholic and control families (Moos & Moos, 1976). Lastly, although a recent study of the measure's factor structure (Robertson & Hyde, 1982) reported that seven factors emerged instead of ten, the Cohesion and Conflict subscales did emerge as predicted, for two different samples. However, the predicted Expressiveness subscale was not supported by the factor analysis.

In the present study, the Cohesion and Conflict subscales were found to have adequate internal

consistency ($\underline{r}$ = .72 and .68, respectively), but the internal consistency of the Expressiveness subscale was found to be unacceptably low ($\underline{r}$=.32). Inspection of the inter-item correlations of the latter scale revealed that the consistency was not adequately improved by deleting problematic items from the scale. Therefore, the Expressiveness subscale was dropped from all remaining analyses.

Experience Sampling Method (ESM). This relatively new measure (Larson & Csikszentmihalyi, 1983) was used to assess subjects' feelings, motivation and attention. The measure involves having subjects carry an electronic pager for one week and fill out self-reports when cued at random times during the day.

The self-report measure (a copy of which is included in Appendix A) was designed to assess several aspects of the subjects' experience at the moment they are signaled, including their location, companions, mood, attention and motivation, as well as additional items not included in the present study. Locations and companions were assessed with single open-ended items ("Where were you when you were signaled?" "Who were you with?") which were later categorized by trained coders.

Mood was assessed using six seven-point semantic differential mood items, with three assessing affect (e.g., happy - sad) and three assessing activation (e.g.

drowsy - alert). Ratings for the three items were averaged to obtain affect and activation scores for each signal. Previous studies (e.g., Russell & Ridgeway, 1983) have identified arousal and activation as the two major factors in people's mood ratings. The measure also included six additional mood items that were not included in the present study.

Lastly, attention and motivation were assessed with one item each. The first asks students to rate how well they were paying attention on a ten point scale (0="not at all" to 10="very well"), referring to their attention to their activity at the moment they were signaled. The motivation item asks "How much did you want to be doing the activity?", using the same ten point scale.

Mean affect, activation, attention and motivation scores were then computed for each subject by averaging their ratings across signals. For each of the four variables, mean scores were computed both by averaging across all responses to obtain overall scores and by averaging separately across responses in four different situations: alone, in class, with family and with friends.

Subjects were signaled seven times per day for seven days. Signals occurred at a random time within every two hour block between 7:30 AM and 9:30 PM.

Pagers can be set to either an auditory or vibrating signal, with the latter used when auditory signals would be disruptive.

Subjects responded to 82% of the signals, with some variation due to subjects forgetting the pager or turning it off for privacy or while asleep. An average of 38 self-reports were collected from each of the subjects in this sample, for a total of 18,052 reports. Preliminary analyses indicated that girls completed more self-reports than boys (Mean=40 for girls and 37 for boys, F=12.5, $p<.000$). However, there were no significant differences in response rate based on grade, community, or family composition.

The Experience Sampling measure has been successfully used in several previous studies and found to have adequate psychometric properties (Larson & Csikzsentmihalyi, 1983). In particular, the pattern of individual subjects' responses has been found to be relatively stable over both a weekly (r = .66 to .75) and two year period (r = .56).

Procedure

Data for the present study were collected as part of a larger study of early adolescence, being conducted through Michael Reese Hospital in Chicago. Data collection took place in eight waves over two years, with four

waves in each year, each three months apart and scheduled to coincide with the seasons of the year. Data were collected from fifth through eighth grade students during all eight waves, and from ninth grade students during only two waves.

Selected students were invited to participate and were given letters for their parents explaining the study, along with parental consent forms. Researchers were available to answer any questions about the study.

After consent forms were obtained, an interview was held with each student to explain the ESM procedure and self-report forms. Students then carried the pager for one week, and a debriefing interview was held after the week of paging to review and clarify the subjects' responses.

After completing the ESM procedure, students were asked to complete a number of questionnaire measures, including the Family Environment Scale and several other measures not included in the present study. In addition, one parent, usually the student's mother, was asked to complete the Family Structure Questionnaire and several other measures also not included in the current study. Students were then paid eight dollars for their participation.

At the end of the school term in which the data were collected, students' grades for that term and for

the previous three terms were obtained from students' records, along with their most recent composite achievement test scores. Of the sample of 483 subjects, grades were unavailable for 16 subjects, and achievement test scores were unavailable for 103 subjects, leaving complete data for 364 subjects.

CHAPTER IV

CALCULATING "ADJUSTED GPA" SCORES

As noted earlier, merely correlating potential predictor variables with students' academic achievement may be misleading, due to the influence of students' ability levels on achievement. Thus, any obtained correlation between a predictor variable and achievement might be due to a relationship between the predictor variable and ability, rather than to a direct relationship with achievement.

For example, a positive correlation between moods and grades could be due to higher-ability children experiencing better moods, with the grades actually due to their ability, not to their mood. Moreover, if low-achieving children are found to experience lower moods but are working at a level consistent with their ability, then interventions designed to improve moods may be of little use in increasing their achievement.

Therefore, as noted by others (e.g., Hess, et al., 1984), it is important to control for the effects of ability on the relationship between predictor variables and achievement. This is commonly done statistically by either including ability as a covariate or by entering ability first in a regression equation predicting achievement, followed by the predictor variables of

interest.

In the present study, a modified version of the latter method was used. Rather than repeatedly entering ability first in regressions, "Adjusted GPA" scores were calculated for each subject, based on an initial regression of ability on achievement. This ability-controlled GPA variable was then used in all remaining analyses.

Initially, Adjusted GPA scores were computed based on the discrepancy between students' Actual GPA and the GPA that would be expected based on their achievement test score, a commonly used procedure. However, preliminary analyses of the resulting variable then suggested the need for a modified procedure, to be detailed below. Results of both methods of calculating relative achievement will be presented, after which the latter method will be used for all remaining analyses.

Calculating Adjusted GPA: Method 1

Consistent with the procedure recommended by Thorndike (1963), a regression equation was constructed using achievement test scores to predict grade point averages. Results of this regression are presented in Table 1. As shown, achievement test scores were found to account for 47% of the variance in grades. The resulting regression equation was then used to calculate the residual variance in GPA for each subject, or the

Table 1

Regression of Achievement Test Scores on Actual GPA (Method 1)

Variable	R	R^2	b	F	p
Achievement Test Scores	.69	.47	.688	18.30	.000

remaining variance in grades that was not explained by achievement test scores. In other words, these residual values reflect the distance students' Actual GPAs were from the regression line, or from their "expected GPA" as predicted by their test scores.

The distribution of the resulting residual variance variable ranged from -6.859 to +5.088, and was found to have a mean of 0 and a standard deviation of 1.47. Negative values indicate actual grades were lower than predicted by the regression equation, while positive values indicate actual grades were higher than would be expected based on test scores.

Problems with Method 1

Preliminary analyses were then conducted on the initial Adjusted GPA variable to identify any systematic differences in Adjusted GPA based on grade, sex, or school. Similar analyses were also conducted on Actual GPA and achievement test scores to allow comparison with the Adjusted GPA variable.

An overall 5 X 2 X 6 (grade by sex by school) analysis of variance (ANOVA) could not be conducted because the two high schools had subjects in only one grade (grade nine) and thus in the same cell of the matrix. Therefore, a 4 X 2 X 4 (grade by sex by school) ANOVA was conducted using only fifth through

eighth grade students, followed by 6 X 2 (school by sex) and 5 X 2 (grade by sex) ANOVAs.

Results revealed a significant school by sex interaction ($F(5,455) = 2.71$, $p<.02$) for Actual GPA but not for Adjusted GPA or achievement test scores. There were no other significant interactions. There were, however, a number of significant main effects for grade, sex and school. Means, standard deviations and F values of these main effects are presented in Tables 2, 3, and 4.

As shown in Table 2, there were significant sex differences in Adjusted GPA ($F(1,362)= 19.16$, $p<.000$), as well as in Actual GPA ($F(1,455) = 37.20$, $p<.000$) and, to a lesser extent, achievement test scores ($F(1,362) = 6.53$, $p<.01$). For all three variables, boys were found to perform more poorly than girls.

Significant main effects for grade (Table 3) were found in Actual GPA ($F(4,466) = 9.34$, $p<.000$) and Adjusted GPA scores ($F(4,364) = 20.03$, $p<.000$), while achievement test scores did not differ by grade. Post-hoc Duncan's multiple range tests following the significant F's revealed that with students in grades seven through nine performed significantly more poorly than students in grades five and six.

Lastly, significant differences by school (Table 4) were found in all three variables: Actual GPA ($F(5,455)$

Table 2

Actual GPA, Achievement Test Scores, and Adjusted GPA (Method 1) by Gender

Achievement Variables	Boys (N=241)	Girls (N=242)	F	p
Actual GPA (N=467)	6.54 (2.34)	7.73 (2.06)	37.20	.000
Composite achievement test percentiles (N=379)	62.53 (23.56)	68.18 (21.98)	6.53	.01
Adjusted GPA (N=374)	-.35 (1.74)	.35 (1.53)	21.95	.000

Note 1: Standard deviations are given in parentheses.

Note 2: Actual GPA was computed from report card letter grades on a 13 point scale, with 13 corresponding to a letter grade of A+ and 1 corresponding to a letter grade of F.

Note 3: Adjusted GPA represents actual GPA after controlling for achievement test scores only (Method 1).

Table 3

Actual GPA, Achievement Test Scores, and Adjusted GPA (Method 1) by Grade

Variable	Grade 5 (N=95)	6 (N=98)	7 (N=104)	8 (N=98)	9 (N=72)	F	p
Actual GPA (N=467)	8.10[a] (1.86)	7.50[a] (2.00)	6.76[b] (2.28)	6.69[b] (2.50)	6.51[b] (2.40)	9.34	.000
Composite achievement test percentiles (N=379)	64.10 (21.44)	60.73 (23.24)	65.70 (24.66)	67.67 (24.55)	69.27 (19.17)		ns
Adjusted GPA (N=374)	1.00[a] (1.31)	.58[a] (1.44)	-.28[b] (1.44)	-.48[b] (1.66)	-.88[c] (1.84)	20.09	.000

Note 1: Standard deviations are given in parentheses.

Note 2: Actual GPA was computed from report card letter grades on a 13 point scale, with 13 corresponding to a letter grade of A+ and 1 corresponding to a letter grade of F.

Note 3: Adjusted GPA represents actual GPA after controlling for achievement test scores only (Method 1)

Note 4: Groups with different superscripts in each row differ significantly at the $p<.05$ level or greater.

Table 4

Actual GPA, Achievement Test Scores, and Adjusted GPA (Method 1) by School

Variable	School 1	2	3	4	5	6	F	p
Actual GPA[2] (N=467)	7.41[a] (2.43)	6.85[b] (2.17)	7.94[a] (1.86)	6.67[b] (2.30)	6.44[b] (2.67)	6.59[b] (2.17)	5.91	.000
Composite achievement test percentiles (N=379)	64.03[a] (23.63)	62.22[a] (23.97)	73.67[b] (21.90)	57.23[a] (21.90)	71.91[b] (16.40)	66.56[a] (21.59)	4.68	.000
Adjusted GPA[3] (N=374)	·52[a] (1.97)	.01[b] (1.25)	.14[b] (1.37)	.05[b] (1.69)	-1.20[c] (2.04)	-.56b (1.58)	6.58	.000

Note 1: Standard deviations are given in parentheses.

Note 2: GPA was computed from report card letter grades on a 13 point scale, with 13 corresponding to a letter grade of A+ and 1 corresponding to a letter grade of F.

Note 3: Adjusted GPA represents residual variance between expected and actual GPA, computed using Method 1 (regressing achievement test scores on GPA)

Note 4: Groups with different superscripts in each row differ significantly at the $p<.05$ level or greater.

= 5.91, $p<.000$), achievement test scores ($F(5,362)$ = 4.69, $p<.000$) and Adjusted GPA ($F(5,362) = 6.58$, $p<.000$). Duncan's comparisons revealed that students in the elementary and junior high schools (Schools 1 and 3) of the upper middle class community had significantly higher Actual GPAs than the remaining students. In addition, students in the junior high and high schools (Schools 3 and 5) of the same community had significantly higher test scores than did students from the other schools. Lastly, subjects from both high schools (ninth graders) (Schools 5 and 6) also had significantly lower Adjusted GPA scores than did students from the remaining schools, but there were no differences in Adjusted GPA among the elementary and junior high schools.

Overall, boys and older students had earned significantly lower grades than would be expected based on their test scores (i.e., had more negative Adjusted GPAs). The age-related difference is consistent with previous studies, which have consistently found that serious academic difficulties (grade retention, absenteeism, suspensions) increase significantly at the junior high level (Galloway, Ball, Bloomfield, & Syed, 1982; Safer, 1986; Rose, Medway, Cantrell, & Marus, 1983). This shift has often been attributed to the to the decreased structure and teacher supervision of junior high schools (Safer, 1986).

In contrast, the sex differences in achievement were less consistent with previous literature. In a review of the literature, Eccles (1984) reports that sex differences in achievement test scores are common, but states that sex differences in course grades "are not evident ... at any level including college" (Eccles, 1984, p.98). On standardized achievement tests girls are typically found to score higher than boys on reading and verbally-oriented tests, while boys score higher on quantitative tests (Maccoby & Jacklin, 1976). As the present composite achievement test score is based on combined scores on reading, language and math subtests, the overall composite scores may be weighted toward the verbal tests, thus accounting for girls' higher scores.

It is unclear how best to interpret these grade, sex and school differences. Clearly, boys and older students differ from girls, younger students, etc., on some other significant variable that is causing them to underachieve. However, a comparison of Adjusted and Actual GPA scores with achievement test scores suggests another potential explanation.

Specifically, it is notable that the differences in Actual and Adjusted GPA do not reflect similar differences in standardized achievement test scores. As noted above, there were no significant grade differences and only a slight sex difference in standardized test

scores. Thus, while boys and girls and students in grades 5-9 earned similar achievement test scores, boys and older students earned considerably lower grades. In addition, high school students from the upper middle class community had the highest test scores but the lowest Actual GPA, a rather surprising pattern.

These conflicting findings raise questions as to whether the lower Actual and Adjusted GPAs earned by boys and older students are due to Actual differences in their performance or to more subjective differences in grading practices between grades, schools or based on gender. For example, grading standards may become stricter as students get older, one school may have a more stringent grading scale, or boys may be graded more strictly than girls (perhaps due to differences in behavior).

It appears that research beyond the scope of the present study is needed to determine whether the present finding that boys and older students earn lower grades than would be expected based on their achievement test scores is best attributed to differences in grading or to some other causal factor(s). Support for the latter explanation would suggest the need for interventions targeting these populations.

For the purposes of the present study, however, these systematic differences by grade, sex and school

remain of concern. As noted, it is unclear whether these findings reflect Actual performance differences or merely grading differences. Moreover, while demographic differences identify groups of students who may be at risk for underachieving, they reveal little about why one child within one of these high-risk groups may be underachieving, while another child in the same group is not. The present study was therefore designed to look beyond the demographic differences to additional, potentially more significant variables.

However, as originally calculated, Adjusted GPA scores would contain an inherent bias or confound based on the grade, sex and school differences. As with the influence of ability, if a correlation was found between moods and Adjusted GPA as originally calculated, it would be unclear whether the relationship was actually due to the effects of sex, grade or school on achievement, rather to the effect of moods. Therefore, in order to focus more clearly on the variables of interest to the present study, it appeared necessary to control for the influence of grade, sex, and school on Adjusted GPA scores.

Calculating Adjusted GPA: Method 2

Thus, Adjusted GPA was recalculated so as to refer to underachievement within a given group and to control

for the effect of grade, sex, and school on grades. As with ability, rather than statistically controlling for these variables in every analysis, grades were "adjusted" for the influence of these variables as well as for the influence of ability. To do so, grade, sex and school were entered into the regression equation along with achievement test scores as predictors of grade point average. Because sex, grade and school are not linear variables, "dummy variables" were created to enter each grade and school as separate dichotomous variables.

Results of the second multiple regression are shown in Table 5. As shown, the resulting equation accounted for 58% of the variance in grade point averages. The second Adjusted GPA variable ranged from -4.16 to +6.93 and was found to be normally distributed, with a mean of 0 and a standard deviation of 1.47.

Lastly, one concern in using the regression method to control for ability is the possibility of ceiling effects. Specifically, it is possible for students with high ability (high achievement test scores, in this case) to have an "A" GPA but earn a negative Adjusted GPA score. This could happen if is impossible to earn a GPA as high as the test scores predict.

To check for ceiling effects in the present study, frequency distributions were conducted to identify the

Table 5

Regression of Achievement Test Scores, Grade, Sex, and School on Actual GPA (Method 2)

Variable	R	R^2	b	F	p
Achievement test scores	.69	.47	.68	390.45	.000
Grade 5	.72	.52	.26	55.34	.000
Grade 6	.74	.56	.18	26.83	.000
Sex	.76	.58	.16	22.98	.000
School 1	.76	.59	.10	8.12	.005
School 3	.77	.59	.07	3.87	.05

Note: The remaining variables (Grades 7-9, Schools 2 and 4-6) did not significantly enter into the equation.

number of subjects with high achievement test scores and high GPAs but significantly negative Adjusted GPAs. Subjects were therefore first divided into three groups based on their Adjusted GPAs. Those with Adjusted GPAs of more than one standard deviation below the mean were in the lowest group (underachievers), those whose Adjusted GPAs were within one standard deviation of the mean were in the middle group (adequate achievers), and those are with Adjusted GPAs more than one standard deviation above the mean constituted the highest group (overachievers). Subjects were then also grouped into quartiles by achievement test scores, and the distribution of students in the resulting Adjusted GPA by achievement test cells was examined.

Results (shown in Table 6) indicated that in all four achievement test quartiles, approximately similar numbers of subjects were in each Adjusted GPA group. The distribution for subjects in the highest quartile of test scores was very similar to the distributions for the other quartiles, except that fewer students in the highest quartile were classified as underachievers. The presence of a significant ceiling effect for Adjusted GPA scores would have resulted in a different distribution of Adjusted GPA scores for students in the highest quartile of achievement test scores, as compared to the remaining three quartiles. Thus, present Adjusted

Table 6

Frequency Distribution Matrix of Adjusted GPA (Method 2) Group by Achievement Test Quartile

Achievement Test Score Quartiles	Adjusted GPA Groups		
	Under Achievers (N=57)	Adequate Achievers (N=272)	Over Achievers (N=45)
Lowest quartile	12	64	15
Second quartile	16	66	12
Third quartile	20	69	5
Highest quartile	9	73	13

GPA scores do not appear to be influenced by a ceiling effect.

To provide a similar check, subjects were also grouped by their Actual GPAs and the distribution of Adjusted GPA scores was again examined. Rather than using quartiles, Actual GPA was divided into five groups by the commonly used letter grades A, B, C, D, and F.

Results (shown in Table 7) indicated that there no "A" students were classified as underachievers, although a significant ceiling effect on Actual grades would have resulted in some A students being classified as underachievers. However, results did indicate that a considerable percentage of "A" students (N=20) were not classified in the highest Adjusted GPA group (overachievers), however. Thus, the ceiling of the grading scale may have depressed the Adjusted GPA scores of these students. However, given that this students reflect a very small percentage of the overall sample, it appears that the potential ceiling effect of the regression method is of little significance in the present study.

Table 7

Frequency Distribution Matrix of Adjusted GPA (Method 2) Group by Actual GPA Group

Actual GPA (Letter grades)	Adjusted GPA Groups		
	Under Achievers (N=57)	Adequate Achievers (N=253)	Over Achievers (N=45)
A		20	12
B	7	143	28
C	27	90	5
D	19	19	
F	4		

CHAPTER V

RESULTS

The present study was designed to address the following questions: 1) Are family variables related to chidlren's daily subjective experience?; 2) Are family variables and children's subjective experience related to the children's academic performance?; and 3) Are family relationships and students' subjective experience more important predictors of academic performance than are family "status" variables (parental education, marital status)?

The first question was addressed by computing zero-order correlations between the subjective experience variables (affect, arousal, attention, motivation) and the Cohesion and Conflict subscales of the Family Environment Scale (FES). The latter two questions were then investigated in two different ways. First, the ability of the family and subjective experience variables to predict children's academic performance was investigated, using correlations and multiple regression analyses. Second, to extend these initial results, underachievers were identified and compared to the remaining students on family and subjective experience variables, again using both univariate and multivariate analyses.

Means and standard deviations of all variables are presented in Appendix A. All variables were found to be normally distributed.

Family characteristics and children's subjective experience

Family characteristics were expected to be related not only to children's academic performance, but also to their day-to-day subjective experience. Relationships between the family variables (parental education, marital status and family relationships) and the subjective experience variables (affect, activation, motivation and attention) were therefore examined. For parental education and family relationships, correlations with the subjective experience variables were computed; for marital status, 3 X 2 (marital status by sex) analyses of variance was conducted on the four subjective experience variables. Results are presented in Tables 8, 9 and 10.

In Tables 8 and 10, correlations with overall subjective experience ratings are shown first, followed by separate correlations with experience under different conditions, such as during classes, while with family members, etc. In addition, correlations were found to differ for girls and boys, so results are presented separately by sex.

Table 8

Correlations Between Parental Education and Children's Subjective Experience

Subjective Experience Variables		Mother's Education Boys (N=226)	Mother's Education Girls (N=242)	Father's Education Boys (N=226)	Father's Education Girls (N=242)
AFFECT:	Overall	.11*	-.02	.17*	.03
	In class	.11	.01	.10	-.13
	With family	.17*	-.10	.09	-.18
	With friends	.03	.04	.14	-.08
	Alone	.06	-.05	.08	.00
ACTIVATION:	Overall	.09	-.05	.05	-.02
	In class	.04	-.05	.07	-.03
	With family	.15*	-.16*	.01	-.13
	With friends	.06	-.04	.05	-.04
	Alone	.06	-.05	.05	.01
MOTIVATION:	Overall	.02	-.08	.10	-.02
	In class	.10	-.17**	.15*	-.11
	With family	.04	.04	.09	.06
	With friends	-.01	-.02	.06	.07
	Alone	-.04	-.04	.04	-.00
ATTENTION:	Overall	.11*	-.09	.04	.04
	In class	.11	-.12	.20**	-.01
	With family	.15*	-.01	.03	.03
	With friends	.04	-.04	.00	.04
	Alone	.08	-.10	.05	-.01

*$p<.05$

**$p<.01$

Table 9

Children's Subjective Experience by Parental Marital Status

Subjective Experience Variables	Marital Status: Intact (N=364)	Separated/ Divorced (N=53)	Remarried (N=28)	F	p
Overall Affect	5.07 (.83)	4.93 (.83)	5.08 (.82)	.71	ns
Overall Activation	4.50 (.80)	4.41 (.82)	4.52 (.85)	.35	ns
Overall Motivation	6.77 (1.44)	6.96 (1.45)	6.33 (1.30)	1.82	ns
Overall Attention	6.81 (1.73)	6.44 (1.79)	6.52 (1.86)	1.61	ns

Note 1: Standard deviations are given in parentheses.

Note 2: F's are main effects for marital status. There were no significant interactions with gender or main effects for sex.

Note 3: Similar nonsignficant results were also found for all four subjective experience variables when analyzed separately by location or companions (e.g., in class, with family, with friends and alone). Therefore, in the interests of clarity only overall scores are presented.

Table 10

Correlations Between Family Relationships and Children's Subjective Experience

Subjective Experience Variables		Family Relationships Subscales: Cohesion Boys (N=231)	Cohesion Girls (N=242)	Conflict Boys (N=231)	Conflict Girls (N=242
AFFECT:	Overall	.16**	.30***	-.22***	-.31***
	In class	.12	.35***	-.18**	-.31***
	With family	.13	.21***	-.18**	-.27***
	With friends	.13	.18**	-.18**	-.23***
	Alone	.13	.20***	-.21***	-.26***
ACTIVATION:	Overall	.09	.23***	-.09	-.22***
	In class	.05	.26***	-.05	-.21***
	With family	.14	.15	-.04	-.23**
	With friends	.02	.13	-.09	-.15
	Alone	.12	.16**	-.12	-.18**
MOTIVATION:	Overall	.09	.11	-.11	-.14
	In class	.10	.26***	-.02	-.23***
	With family	.03	.02	.03	-.11
	With friends	.06	.06	-.10	-.05
	Alone	.05	-.01	-.10	.01
ATTENTION:	Overall	.02	.17**	-.02	-.17**
	In class	.06	.23***	-.04	-.20***
	With family	.00	.10	-.01	-.16**
	With friends	-.02	.06	-.02	-.06
	Alone	-.06	.09	.06	-.09

*p<.05 **p<.01 ***p<.001

Results revealed that parental education was weakly and inconsistently related to children's subjective experience (Table 8), and that marital status was unrelated to subjective experience (Table 9), contrary to expectations. However, children's ratings of the degree of conflict and cohesion in their families were significantly associated with their inner subjective experience, especially for girls (Table 10).

Regarding the former finding (Table 8), low but significant ($p<.05$) positive correlations were found between mother's education and boys' affect, activation and attention when with family members (average r = .15). Similar relationships emerged between fathers' education and boys' motivation and attention during classes. In contrast, for girls, low but significant negative correlations were found between mother's education and girls' activation when with family (r = -.16), and between mother's education and girls' motivation during classes (r = -.17). The remaining correlations between parental education and the subjective experience variables were nonsignificant, including those between father's education and all four subjective experience variables for girls.

In contrast to these results, family cohesion and conflict were more consistently associated with children's subjective experience, especially for girls

slightly higher correlations between family cohesion and children's self-concept (r=.43, p<.05) and family conflict and self-concept (r=-.35, p<.05) for girls and boys together. Since self-concept and subjective experience are likely related, the two findings taken together provide convergent evidence that the quality of family relationships is related to children's inner experience.

In contrast, the finding that marital status was not related to children's subjective experience is not consistent with previous studies (Lorek, 1987). However, the conflicting findings are likely due to the fact that previous studies have typically involved children from a recent divorce, while the mean time since the divorce for the present sample was eight years.

Overall, while children's subjective emotional state in the classroom was generally unrelated to their parents' level of education or marital status, children from more cohesive, less conflictual families reported feeling better, both in the classroom and overall. The latter finding is consistent with previous studies and with the predictions of interpersonally-based personality theories (Winnicott, 1965; Kohut, 1971).

Predictor Variables and Academic Performance: Initial Analyses

Initial analyses investigated the overall relationships between predictor variables (family status, family relationships, subjective experience) and academic performance, for the sample as a whole. First, to investigate the hypothesis that all predictors variables would be significantly related to students' grades (even after controlling for previous performance), the univariate relationships between each predictor variable and performance were computed separately. Second, to examine the hypothesis that subjective experience and family relationships would account for more variance in performance than family status variables, multiple regression analyses were used to calculate the relative influence of the predictor variables.

Individual Relationships Between Predictor Variables and Academic Performance

The individual relationships between each of the predictor variables and academic performance were examined by computing zero-order correlations between students' GPAs and the continuous predictor variables (parental education, family relationships, subjective experience variables). The relationship between GPA and the one categorical variable, marital status, was

investigated using a 3 X 2 (marital status by sex) analysis of variance (ANOVA). Results are presented in Tables 11 and 12, respectively.

Results are again presented separately by sex due to the presence of sex differences. In addition, correlations with both Adjusted and Actual GPA are included to allow comparison of the relationship between predictor variables and academic performance with and without control variables included.

Overall, findings for girls were considerably more consistent with predictions than those for boys, especially for relationships with Adjusted GPA (GPA after control variables were included). All predictor variables except parental education and overall motivation (i.e., six of nine predictor variables) were significantly related to girls' Adjusted GPA (r's = .17 to .25). In contrast, all variables except family relationships were significantly related to boys' Actual GPA (without controls for ability, etc.), but only intrinsic motivation and marital status remained significant after controls were included.

The finding that several significant correlations with Actual GPA were no longer significant after control variables were included points to the importance of including such controls when investigating relationships with academic performance. Present results suggest that

Table 11

Correlations Between Predictor Variables and Achievement Variables by Gender

Predictor Variables	Achievement Variables: Adjusted GPA Boys (N=185)	Adjusted GPA Girls (N=189)	Actual GPA Boys (N=234)	Actual GPA Girls (N=233)
Mother's Education	-.04	.02	.24***	.02
Father's Education	.08	-.11	.25***	.04
Family Cohesion	.14*	.24***	.14*	.19***
Family Conflict	-.04	-.25***	-.04	-.18***
Overall Affect	.10	.27***	.21***	.17**
Overall Arousal	.09	.25***	.09	.10
Overall Motivation	.18**	.04	.10	.05
Overall Attention	.04	.17**	.17**	.29***

*$p<.05$ **$p\leq.01$ ***$p<.001$

Note 1: Adjusted GPA represents grade point averages after controlling for achievement test scores, grade, sex, and school.

Note 2: Actual GPA was computed from report card letter grades on a 13 point scale, with 13 corresponding to a letter grade of A+ and 1 corresponding to a letter grade of F.

Table 12

Children's Actual and Adjusted GPAs by Gender and Parental Marital Status

Achievement Variables	Marital Status: Intact (N=294)	Separated/ Divorced (N=41)	Remarried (N=23)	F	p
Adjusted GPA					
Boys	.09[a] (1.32)	.11[a] (2.21	-.53[b] (2.40)	3.47	.032
Girls	.18[a] (1.33)	-.67[b] (1.20)	-.48[b] (1.45)		
Actual GPA					
Boys	6.89[a] (2.12)	5.79[b] (2.78)	6.07[ab] (2.69)	7.77	.000
Girls	7.99[a] (1.92)	6.80[b] (2.35)	7.30[ab] (1.53)		

Note 1: Adjusted GPA represents grade point averages after controlling for achievement test scores, grade, sex, and school.

Note 2: Actual GPA was computed from report card letter grades on a 13 point scale, with 13 corresponding to a letter grade of A+ and 1 corresponding to a letter grade of F.

Note 3: Standard deviations are given in parentheses.

Note 4: F values indicate main effects for marital status. Sex differences in Actual GPA were presented previously (see chapter 3). There were no significant interactions between marital status and gender.

Note 5: Groups with different superscripts in each row differ significantly at the $p<.05$ level or greater.

the potential influence of parental education, affect, and attention on boys' academic performance can be also be accounted for by one of the control variables (such as ability, grade, etc.) In contrast, results demonstrate that family relationships and subjective experience are associated with girls' academic performance regardless of their grade, school, or previous performance.

The correlations between each variable and performance will be briefly discussed in light of previous correlational studies. The relative importance of each for predicting performance will then be examined.

Parental education. Contrary to expectations, parental education was not consistently positively associated with children's academic performance (Table 11). Both mother's and father's education were significantly positively related to boys' Actual GPA, but had little influence on boys' GPA after control variables were included (Adjusted GPA). Moreover, girls' Actual GPAs were unrelated to parental education, and a low negative correlation (r -.16) was unexpectedly found between mothers' education and girls' Adjusted GPAs, contrary to predictions. The latter finding was due to the fact that girls of more educated mothers' earned higher achievement test scores but similarly higher grades than did girls of less educated mothers (not

shown).

These results were quite surprising in light of previous studies that have reported correlations between achievement and parental education ranging from .35 to .50 (Fotheringham & Creal, 1980). The discrepancy may be related to the above average education of this middle class sample: parental education may be more closely related to achievement among lower socioeconomic samples. The fact that previous studies have generally not controlled for the effects of ability on achievement and have not reported correlations separately by sex also makes comparison with previous findings difficult.

Marital status. As marital status was not a continuous variable, the relationship between marital status and academic performance was examined separately. Subjects were divided into three groups based on parental marital status: intact, remarried, and separated/divorced, with children from widowed or never married parents (N=10) excluded from the current analysis. A 3 X 2 (marital status by sex) analysis of variance (ANOVA) was then conducted on Actual and Adjusted GPA. Duncan's post-hoc comparisons ($p<.05$) were conducted following significant F's to examine group differences.

Results (Table 12) were consistent with expectations, with one exception. Consistent with expectations, children of both sexes from remarried families

and girls from separated/divorced families earned significantly lower Adjusted GPAs than children from intact families. However, while both boys and girls from divorced families earned significantly lower Actual GPAs than did children from intact families, this difference did not hold for boys once control variables were included. Thus, contrary to expectations, Adjusted GPAs of boys from separated/divorced families were not significantly lower than those of boys from intact families.

The latter finding appears to be due to the fact that boys from divorced/separated families earned strikingly lower achievement test scores (not shown) than boys from intact families. Thus, their lower Actual GPA scores were accounted for by their similarly lower test scores, leaving little residual variance (Adjusted GPA).

Overall, while parental education was less predictive of children's academic performance than indicated by previous studies, marital status was more closely related to children's performance. Children of parental divorce were found to perform significantly more poorly in school than children from intact families, consistent with numerous previous findings (Kinard & Reinherz, 1986; Wallerstein & Kelly, 1976).

Family relationships: Consistent with expectations, as noted above, low but significant correlations

were found between girls' ratings of the degree of conflict and cohesion in their families, and their Actual and Adjusted GPAs (Table 11). In contrast, however, there were no significant relationships between boys' FES ratings and their achievement, except for one weak correlation between cohesion and Adjusted GPA (r=.14, p<.05).

The correlations found for girls are somewhat higher than correlations between FES ratings and actual GPA reported by a previous study (Nelson, 1984). The latter study reported a correlation of r=-.15 between GPA and FES ratings of Conflict, and a nonsignificant correlation between Cohesion and GPA, similar to the present results when boys and girls are combined. Since Nelson reported findings for the entire sample of boys and girls, rather than separately by sex, it is unclear whether the present findings are inconsistent with previous results.

Subjective experience. As shown in Table 11, low but significant positive correlations were found between affect and Actual GPA for both boys and girls, and between Adjusted GPA and affect, arousal, and attention for girls but not boys. Thus, girls who report positive moods earn better grades than would be expected based on their test scores, grade, sex, and school. However, as with family relationships, moods were not significantly

related to boys' academic performance, contrary to expectations.

The prediction that children's moods during classes would be more closely predictive of achievement than moods under other circumstances was not supported. Cor-relations between academic performance and students' subjective experience while with different companions are presented in Appendix B, as only overall subjective experience was utilized for the study's main analyses. The magnitude of the correlations between academic performance and subjective experience was generally similar regardless of students' location or companions (e.g, girls' Adjusted GPA and affect: during classes, r=.23, while with family, r=.21, while with friends, r=.17, and when alone, r=.24.) Similarly, when Z-scores (not shown) of each students' relative mood during classes (as compared to their average mood) were computed, few significant relationships were found with academic performance. Thus, rather than being influenced specifically by subject's moods in the classroom in particular, it appears that academic performance is associated with students' overall affective experience.

Summary: Overall, results of zero-order correlations and univariate analyses of variance (by marital status) were generally consistent with previous literature for girls, (with the exception of an unexpected

nonsignificant relationship between mother's education and girls' Adjusted GPA). In contrast, results for boys were less consistent with expectations: only parental marital status, family cohesion, boys' motivation were significantly related to boys' GPAs after control variables were included, and even the latter three relationships were weaker for boys than were the corresponding relationships for girls.

Relative Importance of Family and Subjective Experience Variables for Predicting Academic Performance

While zero-order correlations reflect individual relationships, multivariate analyses are necessary to determine the relative importance of several related variables. Accordingly, to determine the relative importance of the family and subjective experience variables for predicting academic performance, stepwise multiple regression analyses were conducted.

Using Actual GPA as the dependent variable, the following variables were entered as predictors: ability, grade, and school (control variables), mothers' education, father's education, marital status (coded intact=1, remarried=2, divorced=3), family cohesion, family conflict, and overall affect, arousal, motivation and attention. Overall means for the latter four variables were used rather than ratings during classes,

because overall scores had generally been found to be slightly more highly correlated with academic performance in the univariate analyses.

Again, due to the sex differences previously identified, multiple regressions were computed separately for girls and boys. Results of these regression analyses are shown in Tables 13 (girls) and 14 (boys).

Results of the multiple regression analysis for girls were consistent with predictions. Consistent with the expectation that students' subjective experience would be more strongly related to academic performance than family status, affect was the primary predictor of girls' Adjusted GPA after ability, accounting for 6% of the variance. In addition, family conflict and marital status also emerged as significant predictors of academic performance, although they accounted for relatively little variance (2% and 1%, respectively). Consistent with the hypothesis that family relationships would be more important predictors of performance than family status variables, family conflict entered into the equation before marital status and accounted for twice as much variance.

Results indicated that only the control variables and overall motivation significantly predicted boys' GPA, with none of the remaining variables entering into the equation. Moreover, although significant,

Table 13

Step-wise Regression of Family Variables, Subjective Experience Variables, and Control Variables on Girls' Actual GPA.

Variable	R	R^2	Change in R^2	b	F	p
Achievement test scores	.67	.45	.45	.72	231.83	.000
Overall Affect	.72	.51	.06	.17	11.56	.001
Grade 9	.75	.57	.06	-.29	-31.55	.000
Family Conflict	.76	.59	.02	-.13	-7.25	.008
Marital Status	.78	.60	.01	-.14	-9.17	.003
Grade 8	.79	.62	.02	-.18	-12.72	.001
Grade 7	.80	.63	.01	-.15	-8.35	.004

Note 1: The remaining variables (Grades 5 and 6, Schools 1-4, Mother's Education, Father's Education, Family Cohesion, Overall Activation, Overall Motivation and Overall Attention) did not significantly enter into the equation.

Note 2: Marital Status was coded as follows: Intact=1, Remarried=2, Separated/Divorced=3.

Table 14

Step-wise Regression of Family Variables, Subjective Experience Variables, and Control Variables on Boys' Actual GPA.

Variables	R	R^2	Change in R^2	b	F	p
Achievement test scores	.67	.45	.45	.71	203.92	.000
Grade 5	.73	.53	.08	.29	30.58	.000
Grade 6	.75	.57	.04	.17	10.18	.002
Overall Motivation	.76	.58	.01	.12	6.10	.015
School 1	.77	.60	.02	.11	5.02	.03

Note 1: The remaining variables (Grades 7-9, Schools 2-4, Mother's Education, Father's Education, Marital Status, Family Conflict, Family Cohesion, Overall Affect, Overall Activation, and Overall Attention) did not significantly enter into the equation.

Note 2: Marital Status was coded as follows: Intact=1, Remarried=2, Separated/Divorced=3.

motivation accounted for little variance in GPA (1%), following the 57% percent explained by the control variables.

Results for boys are clearly not consistent with predictions, as evident in the correlations reported above. Nevertheless, it should be noted that of the few significant relationships with boys' Adjusted GPA, a subjective experience variable (motivation) emerged as a more significant predictor of performance than parental marital status. The latter finding is thus somewhat consistent with the hypothesis that family status variables would be less important predictors of performance than the remaining predictor variables.

Overall, results indicate that subjective experience and family relationships were more highly related to students' academic achievement than family "status" variables, with this relationship much stronger for girls than for boys. In addition, a significant relationship between two predictor variables - family relationships and subjective experience - was found for both boys and girls. Thus, results also support the notion that family relationships may influence academic performance indirectly by influencing students' affective experience, which in turn appears to influence performance more directly.

While partial support was thus found for the

study's main hypotheses, the weak and nonsignificant findings for boys remain of concern and warrant further investigation. Rather than concluding that family relationships and subjective experience had no influence on boys' academic performance, the possibility that these variables might be more closely related to boys' performance for certain subgroups of the population was investigated.

In particular, although the first set of analyses indicated that family and experiential variables were not highly predictive of performance (especially for boys), students' who are underachieving may still be more likely to experience more problematic family relationships and/or more negative affect than adequately achieving students. To explore this possibility, a post-hoc second set of analyses was conducted to determine if underachieving students differed from higher achievers on any of the family or subjective experience variables.

Predictor Variables and Academic Performance: Additional Analyses Comparing Achievement Groups

As with the initial analyses, post-hoc analyses comparing achievement groups were also conducted in two stages. First, the univariate relationships between predictor variables and achievement groups was examined,

using analyses of variance. Second, the relative importance of the various predictor variables was examined, using discriminant analyses to determine the variables' relative ability to correctly classify subjects into achievement groups.

Consistent with the recommendations of Thorndike, (1963), subjects were identified as underachieving if their Adjusted GPA score (residual variance in GPA after controlling for ability, grade, sex, and school) was more than one standard deviation below the mean Adjusted GPA score. Using this criteria, 56 subjects with Adjusted GPA scores below -1.47 were classified as underachievers. In addition, 45 subjects had Adjusted GPA scores more than one standard deviation above the mean (greater than +1.47) and were therefore identified as overachievers, with the remaining subjects (N=272) considered average achievers.

Individual Relationships Between Predictor Variables and Achievement Groups

The three achievement groups were compared on the variables of parental education, family relationships, and subjective experience, using separate analyses of variance (ANOVAs). In each case a 3 X 2 (achievement group by sex) ANOVA was conducted; results are described below. Since these analyses were conducted to ex-

plore the previous unexpected findings, marital status was not reanalyzed because previous findings had been consistent with expectations for both boys and girls.

Parental education by achievement group. Results of the ANOVAs on mothers' and fathers' education levels are shown in Table 15. For mother's education there was a significant main effect for achievement group {$F(2,364) = 3.52$, $p<.03$}, but no significant main effect for sex or interaction with sex. Post-hoc Duncan's multiple range tests following the significant F revealed that mothers of underachievers were significantly more educated than mothers of students in the other two groups, who did not differ from each other. This finding is similar to the unexpected negative correlation between mother's education and girls' Adjusted GPA, reported earlier; both findings were contrary to expectations.

In contrast to the findings for mother's education, a significant interaction with sex emerged for father's education {$F(5,364) = 4.21$, $p<.02$}. Consistent with expectations, fathers of boys classified as overachievers were significantly more educated (M= more than a college degree) than boys in the other two groups, although the lower two groups did not differ from each other. However, similar to the unexpected pattern for mother's education, Duncan's Multiple Range tests

Table 15

Parental Education by Children's Adjusted GPA Group

Variables	Adjusted GPA Group: Under Achievers (N=54)	Adequate Achievers (N=266)	Over Achievers (N=43)	F	p
Mother's Education	5.51 (1.58)	4.92 (1.51)	4.98 (1.76)	3.52[1]	.03
Father's Education				3.82[2]	.02
Boys	5.50[a] (1.86)	5.42[a] (1.84)	6.35[b] (1.85)		
Girls	5.63[a] (1.84)	5.57[a] (1.81)	4.85[b] (1.66)		

Note 1: F for main effect for Adjusted GPA group. There was no significant interaction with sex.

Note 2: F for interaction between Adjusted GPA group and gender.

Note 3: Standard deviations are given in parentheses.

Note 4: Groups with different superscripts in each row differ significantly at the $p<.05$ level or greater.

Note 5: N's for boys = 26 underachievers, 130 adequate achievers, and 23 overachievers. N's for girls = 28, 136, 20, respectively.

revealed that fathers of overachieving girls were less educated than were fathers of girls in the remaining two groups. These unexpected findings for girls are consistent with the previously discussed unexpected correlational findings and thus will not be discussed further here.

Family Relationships by Achievement Group. While findings for parental education in this set of analyses were thus generally similar to the correlations presented above, different results for family relationships did emerge in the second set of analyses. In contrast to the nonsignificant correlations between family relationships and boys' Adjusted GPA (reported above), analyses of variance revealed significant relationships with Adjusted GPA for both boys and girls. Results are presented in Table 16.

Consistent with expectations, a significant main effect for achievement group was found for both cohesion ($F(2,373) = 8.35$, $p<.000$) and conflict ($F(2,373)=5.62$, $p<.001$). There were no significant main effects for sex or significant interactions with sex; however, means are presented separately by sex to illustrate nonsignificant trends toward such interactions that appear to explain why the correlations (reported in the previous section) were significant for girls but not boys.

Consistent with expectations, post hoc Duncan's

Table 16

Family Relationships by Children's Adjusted GPA Group

FES Variables	Adjusted GPA Group: Under Achievers (N=56)	Congruent Achievers (N=272)	Over Achievers (N=45)	F	p
Cohesion					
Total	14.50[a] (2.26)	15.81[b] (2.10)	15.69[b] (1.79)	8.35	.000
Boys	14.57[a]	15.98[b]	15.42[a,b]		
Girls	14.43[a]	15.65[b]	16.00[b]		
Conflict					
Total	13.43[a] (2.20)	12.27[b] (2.22)	12.51[b] (2.33)	5.62	.004
Boys	13.36[a]	12.34[b]	13.17[a,b]		
Girls	13.50[a]	12.21[b]	11.65[b]		

Note 1: All F values indicate main effects for achievement group. There were no significant interactions with sex; however, means are presented separately by sex to illustrate trends toward interactions that appear to explain why correlations were significant for girls but not boys.

Note 2: Standard deviations are given in parentheses.

Note 3: Groups with different superscripts in each row differ significantly at the $p<.05$ level or greater.

Note 4: N's for boys = 28 underachievers, 131 adequate achievers, 24 overachievers. N's for girls = 28, 141, 21, respectively.

comparisons revealed that underachievers of both sexes rated their families significantly lower in cohesion and significantly higher in conflict than did students in the adequately achieving group. Thus, while the overall correlations were nonsignificant for boys, family relationships were associated with boys' academic performance for underachieving students.

However, surprisingly, while underachieving boys differed significantly from boys in the middle Adjusted GPA group in terms of family relationships, they did not also differ significantly from overachieving boys. Unexpectedly, boys in the latter group (overachievers) reported more negative family relationships than did boys in the middle group, although this difference was not significant. In contrast, underachieving girls differed significantly from girls in both remaining groups, since girls' ratings of family relationships changed in the same direction over the three groups.

It is important to note that there was no significant interaction between Adjusted GPA group and sex; thus, the differing patterns of across Adjusted GPA groups for boys and girls are non-significant. However, the patterns are presented separately to illustrate potential trends.

These findings thus shed further light on the low and nonsignificant correlations observed in the previous

analyses. For both boys and girls, negative family relationships appear to be characteristic of students who are significantly underachieving; however, family relationships are not significantly related to performance among the remaining higher-achieving students. Moreover, among these higher-achieving students, family relationships are associated with performance in the expected direction for girls but not for boys.

Subjective experience by achievement group. A similar pattern emerged for the subjective experience variables, as shown in Table 17. There were no significant interactions with gender for any of the variables. However, consistent with expectations, results revealed a significant main effect for achievement group for overall affect {$F(2,365)=3.80$, $p<.02$}, activation {$F(2,365)=4.85$, $p<.008$} and motivation {$F(2,365) = 3.18$, $p<.04$}. Post-hoc comparisons revealed that, as expected, underachievers of both sexes reported significantly lower overall affect, arousal and motivation than did adequately achieving students. There were no significant differences between achievement groups in terms of overall attention, however.

Again, although there were no significant interactions with sex, a similar pattern of results by sex was found on the affect variable as was described above for family cohesion and conflict. For boys,

Table 17

Subjective Experience by Adjusted GPA Group

Subjective Experience Variables	Adjusted GPA Group: Under Achievers (N=56)	Adequate Achievers (N=264)	Over Achievers (N=45)	F	p
Overall Affect					
Total Sample	4.72[a] (.97)	5.09[b] (.81)	5.05[b] (.77)	3.80	.02
Boys	4.64[a]	4.99[b]	4.80[a,b]		
Girls	4.81[a]	5.18[b]	5.35[b]		
Overall Activation					
Total Sample	4.15 (.96)	4.54[b] (.77)	4.45[b] (.71)	4.85	.008
Overall Motivation					
Total Sample	6.18[a] (1.66)	6.80[b] (1.43)	6.60[b] (1.29)	3.18	.04
Overall Attention					
Total Sample	6.33 (1.76)	6.73 (1.74)	6.92 (1.84)	1.62	ns

Note 1: F values indicate main effects for achievement group. There were no significant interactions with sex; however, means for affect are presented separately by sex to illustrate trends toward a sex by achievement group interaction. There were no such trends for activation, motivation or attention.

Note 2: Standard deviations are given in parentheses.

Note 3: Groups with different superscripts in each row differ significantly at the $p<.05$ level or greater.

Note 4: N's for boys = 28 underachievers, 125 adequate achievers, 24 over achievers. N's for girls = 28, 139, and 21, respectively.

underachievers differed significantly from adequate achievers but not overachievers, while for girls underachievers differed from all of the remaining students. This pattern was not found for the other three subjective experience variables, however.

As with family relationships, these findings shed further light on the correlations reported earlier. Specifically, negative affect experience is characteristic of both boys and girls who are underachieving, while more positive affective experience appears to be associated with better academic performance only for girls.

Relative Importance of Predictor Variables for Discriminating Between Achievement Groups

As with the multiple regression analyses, multivariate analyses were again used to identify the relative influence of the predictor variables. Step-wise discriminant analyses were conducted to compare the ability of the predictor variables to classify students as underachievers, adequate achievers, or overachievers. As with the previous multiple regression analyses, all variables were entered as predictors: mother's education, father's education, conflict, cohesion, and overall affect, activation, motivation and attention. Analyses were again conducted separately by sex.

Results for boys are presented in Table 18 and 19 and results for girls shown in Tables 20 and 21. For boys, all variables except marital status, attention and conflict entered into the analysis, in contrast to the results of the previous multiple regression analyses. (It is likely that conflict did not enter because cohesion and conflict are highly correlated (r = -.53) and thus account for similar variance.) Family cohesion was most predictive of group membership, followed by motivation, mother's education (negative association), arousal and father's education. The total equation was found to correctly classify 73.1% of the underachieving boys, but only 54% of adequately achieving boys and 30% of the boys who were identified as overachievers.

Generally similar results were found for girls, with conflict entering first, followed by mother's education, activation, affect, attention and father's education. Only marital status, cohesion and motivation failed to enter significantly into the equation. For girls, the total equation correctly classified 63% of the underachievers, 31.6% of the adequate achievers and 63.2% of the overachievers.

Thus, consistent with predictions, for both boys and girls, family relationships were most predictive of group membership, entering first into the equations. Consistent with expectations, the quality of family

Table 18

Results of Discriminant Analysis Using Family and Subjective Experience Variables to Predict Boys' Adjusted GPA Groups

Variables Entered	Step	Wilks' Lambda	p
Cohesion	1	.93	.0027
Overall Motivation	2	.89	.0005
Mother's Education	3	.85	.0002
Overall Activation	4	.83	.0001
Father's Education	5	.81	.0001

Note: The remaining variables (Marital Status, Family Conflict, Overall Affect and Overall Attention) did not significantly enter into the equation.

Table 19

Classification Results Using Above Equation to Predict Boys' Adjusted GPA Groups

Actual Group Membership	Predicted Group Membership: Under Achievers	Adequate Achievers	Over Achievers	Actual N
Under Achievers	19 (73.1%)	4 (15.4%)	3 (11.5%)	26 (100%)
Adequate Achievers	25 (20.3%)	67 (54.5%)	31 (25.2%)	123 (100%)
Over Achievers	7 (30.4%)	9 (39.1%)	7 (30.4%)	23 (100%)

Table 20

Results of Discriminant Analysis Using Family and Subjective Experience Variables to Predict Girls' Adjusted GPA Groups

Variables Entered	Step	Wilks' Lambda	p
Conflict	1	.95	.0086
Mother's Education	2	.93	.0103
Overall Motivation	3	.91	.0119
Overall Affect	4	.89	.0093
Overall Attention	5	.87	.0101
Father's Education	6	.86	.0110

The remaining variables (Marital Status, Family Cohesion, and Overall Activation) did not significantly enter into the equation.

Table 21

Classification Results Using Above Equation to Predict Girls' Adjusted GPA Groups

Actual Group Membership	Predicted Group Membership: Under Achievers	Adequate Achievers	Over Achievers	Actual N
Under Achievers	17 (63.0%)	5 (18.5%)	5 (18.5%)	27 (100%)
Adequate Achievers	46 (34.6%)	42 (31.6%)	45 (33.8%)	133 (100%)
Over Achievers	5 (26.3%)	2 (10.5%)	12 (63.2%)	19 (100%)

relationships was thus a more important predictor of academic performance than parents' education level or marital status.

Finally, these analyses shed further light on the correlations previously reported. First, the finding that the equations classified underachievers better than the remaining students again indicates that the predictor variables are more closely associated with academic performance for underachievers than for students in the remaining two groups.

Second, it is notable that the equations classified overachieving girls more accurately than overachieving boys. Again, this pattern accounts for the sex difference in the correlations reported earlier. Similar to the findings reported in the univariate analyses of variance, girls with the best academic performance (relative to ability) report more positive family relationships and affective experience than do underachieving students, but this relationship does not hold for overachieving boys.

Lastly, the discriminant procedure offers one other piece of information relevant to the low and nonsignificant correlations with academic performance reported earlier. Specifically, the classification tables also identify and group the students whose family characteristics, subjective experience and academic per-

formance are not related as the present study predicted: namely, the students who were incorrectly classified by the discriminant equations.

An examination of the incorrectly classified students reveals that 32 boys and 51 girls were classified by the discriminant equation as underachievers when they were actually achieving at a higher level. In other words, these students reported more negative family relationships and subjective experience, similar to the family relationships and subjective experience reported by underachievers; yet they were performing adequately academically despite these negative factors. In contrast, only 7 boys and 10 girls who were actually underachieving were predicted to be in a higher group by the discriminant equation, indicating that underachievers rarely reported the more positive family relationships and subjective experience that were characteristic of higher achieving students. Results thus reveal that the low and nonsignificant correlations are due primarily to the presence of students who are achieving adequately despite negative family relationships and subjective experience.

Overall, the additional analyses shed considerable light on the relationships between family and subjective experience variables and academic performance. While the initial analyses indicate that the overall

relationship between these variables is weak for girls and nonsignificant for boys, further examination reveals that these overall relationships mask a more subtle pattern of relationships. While problematic family relationships and negative subjective experience do not automatically lead to commensurately lower academic performance, especially for boys, both boys and girls who are underachieving are much more likely to report these negative factors. Therefore, results indicate that the predictions of the present study were supported for both boys and girls for a significant subgroup of the sample: the underachievers.

CHAPTER VI

DISCUSSION

The present study was designed to investigate the relationships between family characteristics, young adolescents' inner subjective experience, and the adolescents' academic performance. Overall, results were consistent with interpersonally-based theories of human development, which propose that the quality of interpersonal relationships influences children's inner experience and adaptive functioning.

Regarding the latter finding, young adolescents' reports of the degree of conflict and cohesion in their families were found to be significantly related to the adolescents' academic grade point average (although not for all subgroups of the sample), even after controlling for the effects of previous performance. Moreover, family relationships were found to be more highly related to academic performance than were the traditionally studied family "status" characteristics of parental education and marital status.

Specifically, ratings of family cohesion and conflict were significantly correlated with girls' academic grade point averages and explained more variance in GPA than did marital status or parental

education. In addition, although family relationships did not similarly predict GPA for boys, both boys and girls who were underachieving reported higher levels of conflict and lower levels of cohesion than did higher-achieving children. Family relationships also discriminated between underachieving and adequately achieving students of both sexes better than did parental education or marital status.

These findings add to a growing body of literature that is attempting to identify the specific mechanisms through which childrens' family environment influences their development, including their academic performance. In contrast to previous literature on family characteristics and academic performance that has focused primarily on family status variables (father absence, divorced vs. intact families, etc.), recent research has attempted to identify specific aspects of ongoing family interaction that may influence children's behavior more directly. The present finding that family interactional variables were more highly related to academic performance than were the family status variables provides further support for this view.

In addition, the finding that family relationships were related to academic performance extends previous studies of family interactional variables, which have typically investigated cognitive or behavioral variables

that are perhaps more overtly related to academic achievement. For example, family "achievement press" has been found to be significantly related to academic performance (Marjoribanks & Walhberg, 1975) as have the "educational environment of the home" (Fotheringham & Creal, 1980) and parental achievement-oriented attitudes and expectations (Eccles, 1983). While these variables may also be important, present results demonstrate that the affective quality of family relationships is related to academic achievement as well, consistent with interpersonal theories.

In addition, in contrast to previous studies of family relationships that have examined primarily the mother-child relationship for young children, the present study also extends previous literature by demonstrating a relationship between older children's performance and a more global measure of family relationships. Consistent with interpersonal theory, results suggest that the affective quality of relationships in the family as a whole influences children's development as they get older.

It is noteworthy that these results, at least for girls, are generally consistent with the few previous investigations of family relationships and academic performance. Using the same measure of family relationships (FES), Nelson (1984) reported slightly lower

correlations between actual GPA and ratings of family cohesion and conflict, for boys and girls together (r= -.15 vs. -.25, respectively). In addition, the variance in girls' GPA explained by family relationships in the present study (6% for conflict and 6% for cohesion when entered as the sole predictors) is similar to the variance in achievement accounted for by observer ratings of the affective quality of the mother-child relationship in a previous study (Hess, et al., 1984). The similar findings using two different measures of family relationships thus provide convergent evidence that the quality of family relationships is significantly related to children's academic performance.

Moreover, present results are particularly significant because the study rules out several potential alternative explanations of the relationship between family relationships and academic performance. As previously described, a major weakness of studies investigating potential influences on academic performance has been the failure to control for the influence of ability on academic performance. Ability has consistently been shown to account for over half of the variance in performance (Parkerson, et al., 1984); therefore, failure to control for this variable leaves it unclear whether any relationships between a predictor variable and performance actually merely reflects the

already well-established influence of ability, as opposed to an additional, independent relationship with performance.

The present study controlled for the influence of previous performance or ability on students' grade point averages by regressing achievement test scores on actual GPA; the remaining unexplained variance in GPA was then used as the measure of academic performance. Present findings thus demonstrate that the relationship between academic performance and family relationships exists independently of the effects of ability or previous performance.

In addition, the present study goes one step further by also controlling for the potential influence of grade, sex, and school on performance. Although a number of studies have documented sex, age, and school (Eccles, 1984; Safer, 1986) differences in achievement, investigations of the relationships between achievement and other variables have rarely if ever controlled for these demographic variables. In contrast, in the present study grade, sex and school were entered as predictors of performance along with ability (as described above), to remove variance in performance attributable to these variables. In sum, rather than investigating the academic performance of a group of boys and girls in different grades and from different schools, the present

study examined why children of the same sex, in the same grade, in the same school and possessing similar ability earn differing grade point averages. The relationships found with academic performance were thus also shown to exist independently of the influence of grade, sex, and school.

While family relationships appear to be more highly related to academic performance than are family status variables, the question remains as to how family relationships affect children so as to then potentially influence their performance. Emery (1982) proposed several possible mechanisms through which interparental conflict may affect children, such as by disrupting "attachment bonds" (Bowlby, 1980), by providing parental modeling of maladaptive behavior, by causing altered discipline practices, and by functioning as a stressor on children. He concluded that little evidence exists regarding these hypotheses and has called for additional research on the relationship between family relationships and children's behavior.

The present study was designed to investigate one such mechanism relevant to the hypotheses regarding conflict disrupting attachment. Specifically, interpersonally-based psychodynamic theories (Kohut, 1977) propose that the quality of family relationships influences children's general inner sense of themselves,

others, and the world, which in turn is thought to affect their functioning. This view, while increasingly popular among clinicians (Greenberg & Mitchell, 1986), has rarely been empirically demonstrated. However, using the Experience Sampling Method to obtain information about children's inner affective experience, the present study investigated this hypothesis.

Results revealed that children's reports of the degree of cohesion and conflict in their families were significantly related to their affect or feelings during various moments in their daily lives. For both boys and girls, the more conflictual and less cohesive their families, the more unhappy, irritable, and angry the adolescents reported feeling during their daily activities. For girls, family conflict and cohesion were also associated with the degree to which the girls felt alert, motivated and attentive during their daily lives, especially during classes.

While the relationship between family relationships and inner experience has not been previously assessed using the Experience Sampling Measure, present results are consistent with a previous study of the relationship between family relationships and a one-time measure of children's self-concept (Nelson, 1984). Taken together, both the present study and the study by Nelson provide further support for the view of

interpersonal theories that the quality of family relationships influences children's inner experience. Moreover, the present study demonstrates that family cohesion and conflict relate not only to children's more overt, social cognitions about themselves or their abilities (e.g., "self-concept"), but also relate to their more qualitative feeling states during their daily lives.

Present results also demonstrate, in turn, a relationship between subjective experience and academic performance. Girls' overall affect was found to be the primary predictor of their academic grade point average after previous performance, accounting for an additional 6% of the variance following the 45% explained by previous performance. Girls' overall activation and attention and boys' overall motivation were also significantly related to their GPAs after controlling for ability. In addition, while subjective experience variables generally did not predict boys' GPA within the total sample, underachievers of both sexes reported more negative affect and lower levels of activation and motivation than did higher-achieving students.

Except for the nonsignificant correlations for boys, these findings are consistent with the results of previous studies. A previous study using the Experience Sampling Method (Mayers, 1976) also found low but sig-

nificant correlations between children's subjective state and their academic performance. In addition, present correlations between girls' subjective experience and their academic performance are also similar to previously reported correlations between achievement and other measures of subjective experience. Results are similar to those of previous studies of self-concept and achievement (Hansford & Hattie, 1982) and depression and achievement (Nolen-Hoeksma, et al., 1985). Thus, taken together, these results provide convergent support for the view that children's inner experience influences their performance.

Overall, while some findings were inconsistent with expectations, family relationships were significantly related to children's inner affective experience, and both family relationships and affective experience were in turn related to children's academic performance. Admittedly, however, current data permit only correlational rather than causal interpretations. Nevertheless, results are not inconsistent with the hypothesis that the quality of family relationships influences children's performance indirectly by affecting their inner affective experience, which, in turn, may affect their overall functioning.

It should be noted that while these findings are consistent with interpersonally-based personality

theories (Kohut, 1977; Winnicott, 1965), they are also somewhat consistent with the hypothesis that disrupted relationships may affect children's behavior by functioning as a stressor on children. Theoretically, the two views differ considerably: interpersonal theories predict that relationships contribute to the formation of affectively-colored "representations" of the self and others, while the stress hypothesis predicts that stress leads to negative feelings without postulating the presence of such underlying representations. However, operationally, in both views problematic family relationships are proposed to lead to negative emotions or feelings. The present study demonstrates such a relationship between family relationships and students' affective experience; it does not allow conclusions about whether this relationship is due to the quality of a "representational world", to perceived stress, to a combination of these factors, or to still other factors.

In addition, however, it is notable that interpersonal theories propose that <u>positive</u> family relationships lead to more positive affect, which the stress hypothesis does not. Thus, present findings for girls are consistent with the former theory, as are other studies of self-concept (Nelson, 1984), which presumably also reflect internal representations. Future research is needed to determine more specifically how family

relationships operate so as to affect childrens' feelings.

Lastly, in addition to supporting these predictions of interpersonal theory, results of the present study go a step further in adding to our understanding of the typically low but significant relationship between family and self-oriented predictor variables and academic performance. Several authors have explained low but significant correlations with academic performance by arguing that academic performance is multiply determined, such that there may be numerous causal factors that each account for a small percentage of variance in academic performance. Present results suggest an additional explanation for the low correlations.

In particular, the classification tables of the discriminant analyses (Table 19 and 21) revealed a considerable number of students who reported family relationships and subjective experience that were similar to those of underachieving students - i.e., more negative - but who were performing adequately academically. In contrast, relatively few students reported relatively positive family relationships or academic performance and also performed poorly academically. Thus, the correlations between family relationships and academic performance and between subjective experience

and academic performance were lowered or weakened due mainly to the presence of the former pattern - students who were performing at a higher level than the would be expected given their below average family relationships and subjective experience.

These findings suggest that rather than focusing on identifying more and more predictors of achievement, each of which accounts for only a small percentage of the variance in achievement, future research should investigate why some children who experience risk factors still achieve adequately. For example, risk factors such as family conflict or negative affect may lead to poor academic achievement only in the presence of other risk factors. Similarly, other positive influences may buffer the effects of risk factors (Rutter, 1979).

While the overall predictions of the study were generally supported, several findings were inconsistent with expectations. Most importantly, family relationships and affective experience were found to be characteristic of underachieving boys and girls, were not significantly correlated with boys' academic performance, contrary to expectations. Previous studies of these variables generally have not reported results separately by sex, so it is unclear how these findings compare to previous work.

Discriminant analyses revealed that predictor variables correctly classified similar numbers of underachieving boys (73%) and girls (63%), but considerably more overachieving girls (63%) than boys (30%). Similarly, separate analyses of variance revealed that underachieving girls differed from both adequately achieving and overachieving girls, while the latter relationship did not hold for boys (although this difference was nonsignificant).

Thus, while more negative family relationships and inner experience are associated with lower academic performance for both boys and girls, the sex difference lies specifically in the fact that more positive family relationships are also associated with better school performance for girls but not for boys. This pattern is somewhat reminiscent of the fact that boys' affect was more strongly and consistently correlated with family conflict (a "negative" variable) than with family cohesion, while for girls affect was similarly correlated with both aspects of family relating. In both cases, it appears that boys may be detrimentally affected by more negative family relationships and affective experience, but not similarly positively affected or enhanced by positive relationships and feelings.

What might account for this finding, which does not appear to have been previously reported? The range

and variance of the measures of family relationships and subjective experience was similar for girls and boys; however, it may be that while boys and girls are equally aware of positive feelings and family relationships, boys may respond to positive feelings and relationships differently than do girls. For example, it may be that positive family relationships were not correlated with enhanced academic performance for boys because boys are socialized to be more independent and to separate from their families sooner than are girls (Chodorow, 1978; Levenson, 1984); positive family relationships may therefore have less of an impact on boys. Similarly, girls may feel emotionally closer to family members (in a manner not assessed by the Family Environment Scale) and therefore perhaps more affected by positive family relationships than boys.

It can also be speculated that boys may respond differently to their own more positive feelings states than do girls, such that positive feelings enhance girls' school performance but not that of boys. For example, when girls feel positively, they may be more likely to engage in productive activities (e.g., school-work), while boys may engage in non-school-related activities that do not affect their grade point average. Alternatively, boys may be more distanced from their feelings or better able to control them, such that they

may be better able than girls to do schoolwork despite negative feelings. Either pattern, or a combination of both, could account for the finding that subjective experience was not significantly related to achievement for most boys. Further study is needed to investigate these possible explanations further.

There are two other unexpected findings of note. First, parental education was not significantly related to girls' grade point average, contrary to previous studies. In fact, surprisingly, mothers of under-achieving girls were found to be more educated than mothers of higher achieving girls.

There are several possible reasons for this unexpected finding. Previous studies of the relationships between parental education and performance have typically involved lower SES samples, whereas the average education level of the present sample was one year past high school. Thus, it may be that parental education is related to girls' performance only for lower levels of parental education.

In addition, other variables that are correlated with parental education may actually account for the unexpected negative association. For example, highly educated mothers may be more likely to work outside the home and perhaps to spend less time with their daughters. Lastly, daughters of more educated mothers might

also feel under more pressure to achieve and may therefore underachieve as an expression of anger or rebellion. Research is needed to determine if these speculations are supported by empirical evidence.

The final unexpected finding involves the subjective experience variable of attention. Based on previous studies pointing to the effect of time-on-task (e.g., Karweit, 1984) and effort (Felson, 1984) on academic performance, it was hypothesized that children's feelings would affect their attention during class, which, in turn, was expected to influence their achievement. However, although attention was found to be related to children's grade point average before controlling for previous performance, it was not found to exert be significantly related to performance once ability was controlled, contrary to predictions.

One potential reason for the unexpected findings involves the wording of the self-report item assessing attention: "How well were you paying attention?", rated on a scale of one to ten. Studies of time-on-task have typically coded children dichotomously as either on or off task. Thus, it may be that attention only influences performance at extreme levels of inattention, with gradations in terms of quality of attention less influential. Alternatively, the term "paying attention" may imply a passive process, while more active, effortful

thinking processes such as concentrating, thinking hard, etc. may be more highly associated with academic performance.

In addition to these potential explanations, it should be noted that studies of time-on-task and effort have rarely controlled for the influence of ability on academic performance (Felson, 1984; Karweit, 1984). Thus, present results also raise questions as to whether attention is a by-product of intellectual ability rather than an independent predictor of performance.

Despite these unexpected results, overall the major predictions of the present study were supported. However, before discussing the implications of these findings further, several possible limitations of the present study should be noted.

First, some of the findings may have been affected by the measures used, as with the wording of the measure of attention, described above. In particular, it is notable that present findings are based completely on the young students' own perceptions of their families and their experience, and thus subject to the limitations of self-report measures. As students' perspectives of themselves and their world are clearly important, use of student reports regarding these variables is a strength of the present study. However, it is unclear how the adolescents' perceptions would compare

with others' perceptions. For example, it is unclear whether a family rated as highly conflictual by an adolescent would also be seen that way by another family member or by an independent observer. Similarly, would two adolescents who report feeling unhappy look similarly unhappy to observers? Thus, it is unclear if actual family relationships and subjective experience are related to students' academic performance or if it is specifically students' perceptions of these variables that relate to academic performance. Additional research is therefore needed to investigate the present findings using measures other than self-reports.

In addition to the potential limitations of the measures used, present results could also be affected by the middle to upper middle class sample used in the study. It is unclear how well the present results would generalize to other samples, including lower SES adolescents and younger and older children.

Finally, and perhaps most important, it should be noted that present results are correlational rather than causal. While family relationships and subjective experience were found to be associated with academic performance, the present results cannot determine if the predictor variables exert a causal influence on academic performance.

The alternative possibility that academic perfor-

mance exerts an influence on family relationships and subjective experience can not be ruled out. This possibility is more likely for the latter variable: it is certainly conceivable that students may feel happy as a result of doing well in school or unhappy because they did poorly. Previous studies of self-concept and academic performance have yielded conflicting evidence as to the causal relationships between these variables. Evidence to date suggests that a reciprocal relationship exists between the two, in which performance influences the self-concept, which may then exert an independent relationship on future performance (Marsh, 1984). It can be speculated that a similar reciprocal relationship may exist between affective experience and performance.

In contrast, however, academic performance is less likely to influence family conflict and cohesion as measured by the FES. While poor academic performance may lead to parent-child conflict occasionally, the FES items assess more general, overall family characteristics that would be unlikely to be strongly influenced by one family member's behavior in an entirely different setting (i.e., school).

Lastly, present correlational findings also can not rule out the possibility that the results could be due to unidentified variables that may influence both the predictor variables and academic performance. This

possibility is reduced because the present study controlled for several potential confounding variables. However, present results must be confirmed by longitudinal and/or experimental studies to determine the causal influences on academic performance.

These limitations notwithstanding, the present study represents a significant contribution to an understanding of how the family may influence children's academic performance. The finding that family conflict and cohesiveness are related to children's affect and academic performance after ability is controlled points to the need for further studies of the relationship between family interaction, children's inner experience, and children's behaviors.

There are several ways in which future research could build on the present results. First, the influence of other family process variables (e.g., parental discipline styles, empathy, acceptance, achievement attitudes, etc.) on children's affective experience should be investigated. In addition, the ability of the present measure of children's affective experience and other affectively-oriented child variables to predict academic achievement should be examined, to determine their relative importance as predictors. The question of how students' affective experience influences their behavior so as to affect their academic performance

(e.g., by affecting their attention, concentration, effort, time use, etc.) also requires further examination. Finally, and perhaps most importantly, empirical investigations of interventions designed to foster improved family relationships are needed to investigate their impact on children's affect, achievement behaviors, and academic performance.

In light of evidence of widespread academic underachievement in the United States (Commission on Excellence in Education, 1983), a clearer understanding of how the family influences children's school performance appears imperative to the development of much-needed effective intervention and prevention programs. Toward this end, the present study provides evidence of the potential influence of the quality of family relationships and children's affective experience on children's academic performance. Continued research in this area will hopefully lead to improved assistance for underachieving and at-risk students.

REFERENCES

Bandura, A. (1973). Aggression: A social learning approach. New Jersey: Prentice Hall.

Bloom, B.S. (1976). Human characteristics and school learning. New York: McGraw Hill & Co.

Bowlby, J. (1977). The making and breaking of affectational bonds: Etiology and psychopathology in the light of attachment theory. British Journal of Psychiatry, 130, 201-210.

Bowlby, J. (1980). Attachment and loss. (Vol 3): Loss, sadness, and depression. London: Hogarth Press.

Bretherton, I. (1985). Attachment theory: Retrospect and prospect. Monographs of the Society for Research in Child Development, 50, (1-2, Serial No. 209.)

Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. Cambridge: Harvard University Press.

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. Developmental Psychology, 22, 723-742.

Blos, P. (1961). On Adolescence. Free Press: New York.

Burchinal, L. G. (1964). Characteristics of adolescents from unbroken, broken, and reconstituted families. Journal of Marriage and the Family, 26, 44-51.

Butkovsky, I. S., & Willows, D. M. (1980). Cognitive-motivational characteristics of children varying in reading ability: Evidence for learned helplessness in poor readers. Journal of Personality and Social Psychology, 72, 408-422.

Chapman, M. (1977). Father absence, step-fathers, and the cognitive performance of college students. Child Development, 48, 1155-1158.

Chodorow, N. (1978). The Reproduction of Mothering. Berkeley: University of California Press.

Coleman, J. S. (1966). Equality of educational opportunity. Washington, D.C.: U.S. Office of Education.

Crandall, V. C. (1969). Sex differences in expectancy of intellectual and academic reinforcement. In C. P. Smith (Ed.), Achievement-related behaviors in children. New York: Russell Sage.

Crescimbeni, J. (1965). Broken homes do affect academic achievement. Child and Family, 4, 24-28.

Csikszentmihalyi, M., Larson, R., & Prescott, S. (1977). The ecology of adolescent activity and experience. Journal of Youth and Adolescence, 6, 281-294.

Dornbrusch, S. M., Ritter, P.L., Leiderman, P. H., Roberts, D. F., & Fraleigh, M. J. (1987). The relation of parenting style to adolescent school performance. Child Development, 58, 1244-1257.

Eccles, J. E. (1983). Expectations, values, and academic behaviors. In J. T. Spence (Ed.), Achivement and achievment motives. San Francisco: W.H. Freeman.

Eccles, J. E. (1984). Sex differences in achievement patterns. In Nebraska Symposium on Motivation: Nebraska: University of Nebraska Press.

Emery, R. E. (1982). Interparental conflict and the children of discord and divorce. Psychological Bulletin, 92, 310-330.

Erikson, E. H. (1975). Identification and identity. In J. Conger (Ed.), Contemporary issues in adolescent development. New York: Harper & Row.

Estrada, P., Arsenio, N. F., Hess, R., & Holloway, S. (1987). Affective quality of the mother-child relationship: Consequences for children's school-relevant cognitive functioning. Developmental Psychology, 23, 210-215.

Fairbairn, W. R. D. (1952). An object relations theory of the personality. New York: Basic Books.

Felson, R. B. (1984). The effect of self-appraisals of ability on academic performance. Journal of Personality and Social Psychology, 47, 944-952.

Forehand, R., Long, N., Brody, G. H., & Fauber, R. (1986). Home predictors of young adolescents' school behavior and academic performance. Child Development, 57, 1528-1533.

Fotheringham, J. B. & Creal, D. C. (1980). Family socioeconomic educational-emotional characteristics as predictors of school achievement. Journal of Educational Research, 73, 311-317.

Galloway, D., Ball, T., Blommfield, D., & Syed, R. (1982). Schools and Disruptive Pupils. London: Longman.

Gaudry, E. & Spielberger, C.D. (1971). Anxiety and educational achievement. Sydney: John Wiley & Sons.

Gibson, H. B. (1969). Early delinquency in relation to broken homes. Journal of Child Psychology and Psychiatry and Allied Discplines, 19, 195-204.

Glick, P. C. (1979). Children of divorced parents in demographic perspective. Journal of Social Issues, 35, 170-182.

Goldstein, J., Freud, A., & Solnit, A. J. (1973). Beyond the best interests of the child. New York: Free Press.

Greenberg, J. R. & Mitchell, S. A. (1983). Object relations in psychoanalytic theory. Cambridge: Harvard University Press.

Guidano & Liotti (1983). Cognitive processes and emotional disorders. New York: Guilford Press.

Hansford, B. C. & Hattie, J. A. (1982). Relationship between self and achievement/performance measures. Review of Educational Research, 52, 123-142.

Havigurst, R. J., Graham, R. A., & Eberly, D. (1972). American Youth in the mid-seventies. Bulletin of the National Association of Secondary School Principals, 56, 1-13.

Hess, R. D. & Camara, K. A. (1979). Post-divorce family relationships as mediating factors in the consequences of divorce for children. Journal of Social Issues, 35, 79-96.

Hess, R. D., Holloway, S. D., Dickson, W. P., & Price, G. G. (1984). Maternal variables as predictors of children's school readiness and later achievement in vocabulary and mathematics in sixth grade. Child Development, 55, 1902-1912.

Hess, R. D. & McDevitt, T. M. (1984). Some cognitive consequences of maternal intervention techniques: A longitudinal study. Child Development, 55, 2017-2030.

Hetherington, E. M. (1979). Divorce: A child's perspective. American Psychologist, 34, 851-858.

Hetherington, E. M., Cox, M., & Cox, R. (1979b). Family interaction and social emotional and cognitive development of children following divorce. In V. Vaugh & T. Brazelton (Eds.), The family: Setting priorities. New York: Science and Medicine.

Hettena, C. M. & Ballif, B. L. (1981). Effects of mood on learning. Journal of Educational Psychology, 73, 505-508.

Izard, C. E., Nagler, S., Randall, D., & Fox, J. (1965). The effects of affective picture stimuli on learning perception and affective values of previously neutral symbols. In S.S. Tompkins and C. E. Izard (Eds.), Affect, cognition, and personality. New York: Springer.

Izard, C. E., Wehmer, G. M., Livesey, W. & Jennings, J. R. (1965). Affect, awareness, & performance. In S.S. Tompkins and C. E. Izard (Eds.), Affect, cognition, and personality. New York: Springer.

Jordan, T. J. (1981). Self-concepts, motivation and academic achievement of black adolescents. Journal of Educational Psychology, 73, 509-517.

Karweit, N. (1984). Time on task reconsidered: Synthesis of research on time and learning. Educational Leadership, 41, 32-35.

Kaslow, N. J., Rehm, L. P., & Siegel, H. W. (1984). Social cognitive and cognitive correlates of depression in children. Journal of Abnormal Psychology, 12, 605-620.

Kinard, E. M. & Reinherz, H. (1986). Effects of marital disruption on children's school aptitude and achievement. Journal of Marriage and the Family, 48, 285-293.

Kohut, H. (1977). The restoration of the self. New York: International Universities Press.

Kohut, H. (1980). Summarizing reflections. In A. Goldberg (Ed.), Advances in Self Psychology. New York: International Universities Press.

Larson, R. W. & Csikszentmihalyi, M. (1983). The Experience Sampling Method. In H. T. Reis (Ed.), Naturalistic approaches to studying social interaction: New directions for methodology of social and behavioral sciences. New Jersey: Jossey Press.

Larson, R., Csikszentmihalyi, M., & Graef, R. (1980). Mood variability and the psychosocial adjustment of adolescents. Journal of Youth and Adolescence, 9, 469-490.

Levenson, R. (1984). Intimacy, autonomy, and gender: developmental differences and their reflection in adult relationships. Journal of the American Academy of Psychoanalysis, 12, 529-544.

Lorek, P. (1987). Coping with Parental Divorce: Achievement Motivation and Peer Relations in the Gifted Adolescent. Unpublished manuscript, University of Chicago, Chicago, Illinois.

Maccoby, E. E. & Jacklin, C. N. (1974). Psychology of Sex Differences. Stanford, California: Stanford University Press.

Masters, J. C., Barden, C., & Ford, M. E. (1979). Affective states, expressive behaviors and learning in children. Journal of Personality and Social Psychology, 37, 370-380.

Majoribanks, K. (1979a). Family and school environment correlates of intelligence, personality and school-related affective characteristics. Genetic Psychology Monographs, 99, 165-183.

Marjoribanks, K. (1979b). Family environments. In H. J. Wahlberg (Ed.), Educational envrionments and effects: Evaluation, policy, and productivity. Berkeley: McCutchan.

Marsh, H. W., Cairns. L., Relich, J., Barnes, J., & Debus, R. (1984). The relationship between dimensions of self-attribution and dimensions of self-concept. Journal of Educational Psychology, 76, 3-32.

Mayers, P. L. (1976). Flow in adolescence and its relation to school experience. Unpublished doctoral dissertation, University of Chicago, Chicago, Illinois.

McGraw-Hill, Inc. (1983). User's Manual, Comprehensive Test of Basic Skills. Monterey, California: McGraw-Hill.

McIntyre, D. J., Copenhaver, R. W., Byrd, D. M. & Norris, W. R. A study of engaged student behavior within classroom activities during mathematics class. Journal of Educational Research, 77, 55-59.

Moos, R. & Moos, B. (1976). A typology of family social environments. Family Process, 15, 357-371.

Moos, R. & Moos, B. (1981). Family Environment Scale Manual. Palo Alto: Consulting Psychologists Press.

National Commission on Excellence in Education. (1983). A nation at risk: The imperative for national reform. Washington, D.C.: United States Government Printing Office.

Neeper, R. & Lahey, B. B. (1983). Learning disabilities of children. In C. E. Walker & M.C. Roberts (Eds.) Handbook of clinical child psychology. New York: Wiley.

Nelson, G. (1984). The relationships between dimensions of classroom and family environments and the self-concept, satisfaction, and achievement of grade 7 and 8 students. Journal of Community Psychology, 12, 276-287.

Nolen-Hoeksma, S., Seligman, M. E. P., & Girgus, J. S. (1983). Learned helplessness in children: A longitudinal study of depression, achievement, and explanatory style. Journal of Personality and Social Psychology, 51, 435-442.

Nye, F. I. (1957). Child adjustment in broken and unhappy homes. Marriage and Family Living, 19, 356-361.

Parkerson, J. A., Lomax, R. G., Schiller, D. P., & Wahlberg, H. W. (1984). Exploring causal model of educational achievement. Journal of Educational Psychology, 76, 638-646.

Petersen, J. L. & Zill, N. (1986). Marital disruption, parent-child relationships, and behavior problems in children. Journal of Marriage and the Family, 48, 295-307.

Phillips, D. (1984). The illusion of incompetence among academically competent children. Child Development, 55, 2000-2016.

Power, M. J., Ash, P. M., Schoenberg, E., & Sorey, E. C. (1974). Delinquency and the family. British Journal of Social Work, 4, 287-295.

Richards, H. C., Gaver, D. & Golicz, H. (1984). Academically unpredictable children: Their attitudes toward school subjects. Journal of Educational Research, 77, 273-276.

Robertson, D. U. & Hyde, J. S. (1982). The factorial validity of the Family Environment Scale. Educational and Psychological Measurement, 42, 1233-1241.

Rose, J., Medway, F. J., Cantrell, U. L. & Marus, S. H. (1983). A fresh look at the retention-promotion controversy. Journal of School Psychology, 21, 201-211.

Russell, J. & Ridgeway, D. (1983). Dimensions unerlying children's emotional concepts. Developmental Psychology, 19, 795-804.

Rutter, M. (1979). Invulnerablity, or why some children are not damaged by stress. In S.J. Shamis (Ed.) New Directions in children's mental health. New York: Spectrum.

Rutter, M. (1971). Parent-child separation: Psychological effects on the children. Journal of Child Psychology and Psychiatry 12, 233-260.

Rutter, M., & Yule, W. (1975). The concept of specific reading retardation. Journal of Clinical Psychology, 16, 181-197.

Safer, D. J. (1986). The stress of secondary school for vulnerable students. Journal of Youth and Adolescence, 15, 405-417.

Santrock, J. W. (1972). Relation of type and onset of father absence to cognitive development. Child Development, 43, 455-469.

Santrock, J. W., Warshak, R., Lindberg, C., & Meadows, L. (1982). Children's and parents' observed social behaviors in step-father families. Child Development, 53, 472-480.

Sarason, I. G. (1972). Test anxiety and the model who fails. Journal of Personality and Social Psychology, 22, 410-413.

Science Research Associates. (1985). SRA Survey of Basic Skills. California: Science Research Associates, Inc.

Song, I. & Hattie, J. (1984). Home environment, self-concept, and academic achievement: A causal modeling approach. Journal of Educational Psychology. 76, 1269-1281.

Soresby, A. & Christensen, B. (1976). Differences in interaction and environmental conditions in clinic and non-clinic families: Implications for counselors. Journal of Marriage and Family Counseling, 2, 63-71.

Thorndike, R. L. (1963). The concept of over- and and under-achievement. New York: Columbia University Teacher's College, Bureau of Publications.

Tobias, S. (1977). Anxiety research in educational psychology. Journal of Educational Psychology, 71, 573-582.

Trotman, F. K. (1977). Race, I.Q., and the middle class. Journal of Educational Psychology, 69, 266-273.

U.S. Bureau of the Census. (1980). Statistical abstract of the United States: 1980. Washington, D.C.: U.S. Government Printing Office.

Wallerstein, J.S. & Kelly, J. B. (1974). The effects of parental divorce: The adolescent experience. In E.J. Anthony and C. Koupernik (Eds.), The Child in his family: Children at Psychological Risk. New York: John Wiley.

Wallerstein, J. S. & Kelly, J. B. (1976). Effects of parental divorce: Experiences of the child in later latency. American Journal of Orthopsychiatry, 46, 256-269.

Weiner, B. (1979). A theory of motivation for some classroom experiences. Journal of Educational Psychology, 71, 3-25.

Weiss, J. (1974). The identification and measurement of home environmental factors related to achievement motivation and self-esteem. In K. Majoribanks (Ed.), Environments for learning. London: National Foundation for Education Research.

White, K. R. (1982). The relationship between socioeconomic status and academic achievement. Psychological Bulletin, 91, 461-481.

Winnicott, D. W. (1965). The family and individual development. London: Tavistock.

Wolf, E. S., Gedo, J. E., & Terman, D. M. (1972). On adolescent process as a transformation of the self. Journal of Youth and Adolescence, 1, 257-272.

Wood, R. (1984). Doubts about underachievement, particularly as operationalized by Yule, Lansdown and Urbanowitz. British Journal of Clinical Psychology, 23, 231-232.

Yule, W. (1973). Differential prognosis of reading backwardness and specific reading retardation. British Journal of Educational Psychology, 43, 244-248.

Yule, W., Lansdown, R. & Urbanowitz, M. (1982). Predicting educational attainment from WISC-R in a primary school sample. British Journal of Clinical Psychology, 21, 43-46.

APPENDIX A

THE CHILD'S FAMILY

Every family is different and has different daily routines. In this set of questions we would like to obtain information on the family of the student participating in the study.

Sometimes family changes make it difficult to answer these kind of fixed questions. If this is the case, we will understand. Please do the best you can to describe your child's current family.

I. The Parents of the Student

1. What is your relationship to the student in the study?

Mother	1
Father	2
Step-Mother	3
Step-Father	4
Other _____	

2. How much education have you received? Also, please indicate the educational level of your husband or wife?

(If you are remarried, please answer this and the following questions in terms of your present spouse. If you are divorced or separated and not remarried and your son or daughter is still in contact with or receiving support from your previous spouse, then answer these questions in terms of that person.)

	Yourself	Your Spouse
Elementary School	1	1
Middle School	2	2
Some High School	3	3
High School	4	4
Business or Technical School	5	5
Some College	6	6
College Degree	7	7
Graduate/Professional Degree	8	8
Does not apply		9

3. Are you currently employed?

Yes	1
No	2

4. If employed, what is your job? (please provide an adequate description of your responsibilities.)

5. Would you say that you are satisfied with your current job?

Very satisfied.....	1
Satisfied.....	2
Moderately Satisfied	3
Moderately Dissatisfied	4
Dissatisfied	5
Very Dissatisfied....	6

6. How many hours a week do you work? _____

7. At what time of the day do you usually leave home to go to work?

8. At what time of the day do you usually get home from work?

9. Is your spouse currently employed?

Yes.....	1
No	2

10. If employed, what is his or her job? (please provide an adequate description of his or her responsibilities.)

11. Would you say that your spouse is satisfied with his or her current job?

Very satisfied.....	1
Satisfied.....	2
Moderately Satisfied	3
Moderately Dissatisfied	4
Dissatisfied	5
Very Dissatisfied....	6

12. How many hours a week does your spouse work? _____

13. At what time of the day does your spouse usually leave home to go to work?

14. At what time of the day does he or she usually get home from work?

15. Are there any regular times during the week when your child is under someone else's care?

Yes	1
No	2

16. If so, please list the days and approximate times:

17. Are there any regular times during the week when you child is home alone?

Yes 1
No 2

18. If so, what kind of arrangements do you have? Please list the days and approximate times:

19. What is your ethnic background? (For example, Polish, Italian, German)

20. What is the ethnic background of your spouse?

21. Where were you born? _____ (city) _____ (state or country)

22. Where was your spouse born? _____ (city) _____ (state or country)

23. What is your present marital status?

Married..... 1
Separated..... 2
Divorced..... 3
Divorced and remarried..... 4
Widowed..... 5
Widowed and remarried..... 6
Single, never married..... 7

24. (If married) How many years have you been married to your husband or wife?

25. If you are divorced or separated from your child's father/mother, how long ago were you divorced or separated?

26. If you are divorced or separated from your child's father/mother, about how often does he or she see this person?

Daily	1
More than once a week	2
Weekly	3
Monthly	4
Several times a year	5
Yearly	6
Rarely or never	7
Not applicable	9

II. The Student's Family

1. Who are the people who currently live in your household? Please remember to include all adults, including yourself and all children, including the child in the study.

	Relationship to the student in the study (mother, father, brother, etc.)	Sex	Age
1			
2			
3			
4			
5			
6			
7			
8			

(Please indicate whether any of your child's brothers or sisters are "half-" siblings or "step-" siblings.)

2. Does your son or daughter have any brothers or sisters that are not living with you?

	Relationship to the student	Sex	Age	Where living?
1				
2				
3				
4				

(Again please indicate "half-" brothers, sisters, etc., if applicable)

FAMILY ENVIRONMENT SCALE

Describe your family. Put a circle around the 1 if true; circle the 2 if false. If a statement seems partly true and partly false, circle the number that is closest to being accurate.

		TRUE	FALSE
1.	Family members really help and support one another.	1	2
2.	Family members often keep their feelings to themselves.	1	2
3.	We fight a lot in our family.	1	2
4.	We often seem to be killing time at home.	1	2
5.	We say anything we want to around our home.	1	2
6.	Family members rarely become openly angry.	1	2
7.	We put a lot of energy into what we do at home.	1	2
8.	It's hard to "blow off steam" at home without upsetting somebody.	1	2
9.	Family members sometimes get so angry they throw things.	1	2
10.	There is a feeling of togetherness in our family.	1	2
11.	We tell each other about our personal problems.	1	2
12.	Family members hardly ever lose their tempers.	1	2
13.	We rarely volunteer when something has to be done at home.	1	2
14.	If we feel like doing something at the spur of the moment we often just pick up and go.	1	2
15.	Family members often criticize each other.	1	2
16.	Family members really back each other up.	1	2
17.	Someone usually gets upset if you complain in our family.	1	2
18.	Family members sometimes hit each other.	1	2
19.	There is very little group spirit in our family.	1	2
20.	Money and [illegible] are rarely talked about in our family.	1	2

		TRUE	FALSE
21.	If there's a disagreement in our family, we try hard to smooth things over and keep the peace.	1	2
22.	We really get along well with each other.	1	2
23.	We are usually careful about what we say to each other.	1	2
24.	Family members often try to one-up or out-do each other.	1	2
25.	There is plenty of time and attention for everyone in our family.	1	2
26.	There are a lot of spontaneous discussions in our family.	1	2
27.	In our family, we believe you don't ever get anywhere by raising your voice.	1	2

Experience Sampling Method Self-Report Questionnaire
(Completed after each pager signal)

Page 1

DAY:_____ TIME SIGNALLED:_____AM|PM TIME FILLED OUT:_____

JUST BEFORE YOU WERE SIGNALLED:

WHAT WERE YOU THINKING ABOUT?_____

_____

WHERE WERE YOU?_____

WHAT WERE YOU DOING?_____

_____

NAME OF TV SHOW, BOOK, RECORD OR TAPE; TOPIC OF CONVERSATION (Circle One):

_____

	NOT AT ALL		SOME WHAT		QUITE		VERY
HOW MUCH CHOICE DID YOU HAVE ABOUT DOING THIS ACTIVITY?	+						+
DO YOU WISH YOU HAD BEEN DOING SOMETHING ELSE?	+						+
HOW WELL WERE YOU PAYING ATTENTION?	+						+
HOW SKILLED ARE YOU AT THIS ACTIVITY?	+ 1	2	3	4	5	6	7 + 8 9 10

HOW WERE YOU FEELING BEFORE YOU WERE SIGNALLED?

	VERY MUCH	KIND OF	A LITTLE BIT	NOT AT ALL
SORRY	+++	++	+	.
IN CONTROL	+++	++	+	.
AWKWARD	+++	++	+	.
LONELY	+++	++	+	.
SELF CONSCIOUS	+++	++	+	.
HYPER	+++	++	+	.
COOPERATIVE	+++	++	+	.
PROUD	+++	++	+	.
CALM	+++	++	+	.

OVERALL, HOW WERE YOU FEELING?

	VERY+	QUITE+	SOME	NEITHER	SOME	QUITE+	VERY+	
CHEERFUL	0	•	.	-	.	•	0	IRRITABLE (grouchy)
BORED	0	•	.	-	.	•	0	EXCITED
UNHAPPY	0	•	.	-	.	•	0	HAPPY
ALERT	0	•	.	-	.	•	0	DROWSY
ANGRY	0	•	.	-	.	•	0	FRIENDLY
STRONG	0	•	.	-	.	•	0	WEAK
UGLY	0	•	.	-	.	•	0	ATTRACTIVE

IF YOU WERE FEELING A LOT OF SOMETHING, WHY DID YOU FEEL THAT WAY?

I FELT:_____ BECAUSE:_____

Page 2

_____

WHO WERE YOU WITH (OR TALKING TO ON THE PHONE)? (Check all that apply)

ALONE, OTHER PEOPLE NEARBY	( )	IN CLASS	( )
ALONE, NO ONE AROUND	( )	ONE FRIEND - A BOY	( )
MOTHER	( )	ONE FRIEND - A GIRL	( )
FATHER	( )	SEVERAL FRIENDS - BOYS	( )
SISTERS:_____		SEVERAL FRIENDS - GIRLS	( )
BROTHERS:_____		SEVERAL FRNDS-BOYS & GIRLS	( )
OTHER RELATIVES:_____		YOUR BOYFRIEND/GIRLFRIEND	( )
OTHERS:_____			

CIRCLE THE ONE BEST ANSWER:

IF YOU WERE ALONE, WHY?

BECAUSE:

1 NOBODY IS AROUND
2 NOBODY WANTS TO BE WITH ME
3 I WANT TO BE ALONE TO CONCENTRATE ON WHAT I AM DOING
4 I WANT TO BE ALONE TO THINK ABOUT THINGS, GET MYSELF TOGETHER
5 I AM TIRED OF PEOPLE
6 I AM ENJOYING BEING ALONE
7 OTHER _____

IF YOU WERE WITH SOMEONE, WHY? (Or talking to someone by phone)

BECAUSE:

1 I HAVE TO BE
2 I WANT TO BE -- I AM ENJOYING THIS PERSON (OR PERSONS)
3 I WANT TO BE -- I'M GETTING SOMETHING FROM THIS PERSON (OR PERSONS) WHAT? _____
4 THIS PERSON(S) WANTS TO BE WITH ME
5 BECAUSE OF AN ACTIVITY I AM DOING
6 I DON'T WANT TO BE ALONE
7 OTHER _____

IF YOU WERE WITH PEOPLE, WERE THEY:

	VERY	QUITE	SOME	NEITHER	SOME	QUITE	VERY	
FRIENDLY	0	•	.	-	.	•	0	UNFRIENDLY
SERIOUS	0	•	.	-	.	•	0	JOKING

WAS SOMEBODY BEING THE LEADER? 1) YES 2) NO

WAS IT YOU? 1) YES 2) NO. WHO WAS IT? _____

GREAT THOUGHTS, NASTY CRACKS, CARTOONS AND JOKES, EXCUSES ...

APPENDIX B

Means and Standard Deviations of Study Variables

Variable	Mean	Standard Deviation
Adjusted GPA	0.00	1.47
Actual GPA	7.14	2.28
Composite Achievement Test Percentiles	65.40	22.92
Mother's Education	5.07	1.51
Father's Education	5.52	1.86
Family Cohesion (FES)	15.60	2.17
Family Expressiveness	12.90	1.76
Family Conflict	12.50	2.31
Affect		
Overall	5.05	.84
In class	4.96	1.03
With family	5.09	1.08
With friends	5.35	.91
Alone	4.80	.99
Arousal		
Overall	4.49	.80
In class	4.44	.96
With family	4.47	1.12
With friends	4.84	.91
Alone	4.19	.96
Motivation		
Overall	6.76	1.44
In class	7.07	2.12
With family	7.43	2.70
With friends	7.76	1.78
Alone	7.08	2.01

Means and Standard Deviations of Study Variables - Continued

Variable	Mean	Standard Deviation
Attention		
Overall	6.72	1.78
In class	6.78	2.23
With family	7.21	2.50
With friends	7.09	2.08
Alone	6.50	2.38

APPENDIX C

Correlations Between Achievement Variables and Subjective Experience with Different Companions

Subjective Experience Variables	Achievement Variables: Actual GPA Boys (n=234)	Actual GPA Girls (n=233)	Adjusted GPA Boys (n=185)	Adjusted GPA Girls (n=189)
AFFECT				
Overall	.21***	.17**	.10	.27***
In class	.19**	.12	.10	.23***
With family	.17	.09	.07	.21**
With friends	.17	.09	.09	.17
Alone	.06	.16**	-.00	.24***
AROUSAL				
Overall	.09	.10	.09	.25***
In class	.01	.05	.02	.18**
With family	.08	-.03	.05	.16
With friends	.06	.01	.04	.18**
Alone	.01	.12*	-.03	.27***
MOTIVATION				
Overall	.10	.05	.18**	.04
In class	.13	.02	.11	.03
With family	.17**	.02	.11	-.14
With friends	.11	.04	.19**	.07
Alone	-.02	.01	.07	-.06
ATTENTION				
Overall	.17**	.29***	.04	.17**
In class	.13	.25***	.05	.13
With family	.14	.27	-.03	.19**
With friends	.10	.21***	.01	.08
Alone	.12	.27***	-.01	.12

*$p<.05$ **$p\leq.01$ ***$p<.001$

APPROVAL SHEET

The dissertation submitted by Carla M. Leone has been read and approved by the following committee:

Dr. Joseph Durlak, Director
Professor, Psychology
Loyola University of Chicago

Dr. Maryse Richards
Assistant Professor, Psychology
Loyola University of Chicago

Dr. Reed Larson
Associate Professor, Human Development
University of Illinois

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 28, 1984
Date

Joseph A. Durlak
Director's Signature